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TEXTILE WORLD RECORD

LIBRARY OF CONGRESS

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LORD & NAGLE COMPANY · Boston & Philadelphia

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The Textile-Finishing Machinery Co.

17 EXCHANGE PLACE, PROVIDENCE, R. I.

Singeing Machines,

Boiling Kiers,

Washers, Squeezers,

Chemic and Sour

Rusden Patent

Continuous Chainless

Steamer,

Aniline Agers,

Dyeing Machines,

Open Soapers,

Blanket Washers,

Color Kettles,

Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders,

Automatic Tentering Machines,

Water and Starch Mangles,

Dampening Machines,

Dyeing Machines for Chain Warps.

BUILDERS OF ALL KINDS OF

MACHINERY

FOR

BLEACHING
DYEING
DRYING

AND

FINISHING

Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, &c.

Patent Combination Rolls Made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-deposited Copper Rolls for all Purposes.

Padding and Drying Machines for Shade Cloths.

Single and Double Cylinder Engines.

Hydraulic Presses and Pumps.

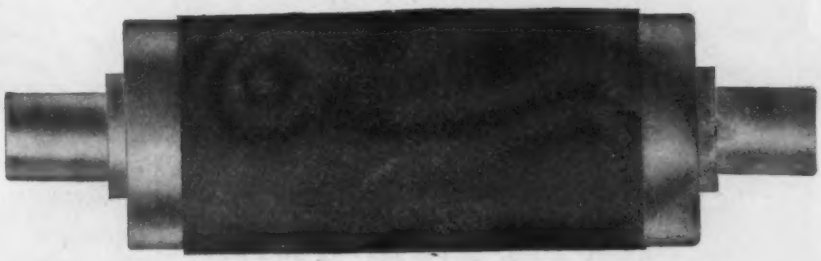
Mercerizing Machinery for Piece Goods and Yarn in the Warp or Chain

ALL KINDS OF OUTFITS FOR BLEACHING THREAD AND SOFT TWISTED YARN.
BLEACHING MACHINERY FOR YARNS IN THE WARP OR CHAIN.

Estimates, Drawings and full particulars of complete plants furnished on application.

Southern Agent, STUART W. CRAMER, Trust Bldg., Charlotte, N. C., Equitable Bldg, Atlanta, Ga.

Calender and Mangle Rolls



COTTON

PAPER (LINEN, COTTON OR MANILLA)

FELT PAPER

COMBINATION (COTTON AND HUSK)

COMBINATION (COTTON AND EXCELSIOR)
PATENTED

HUSK

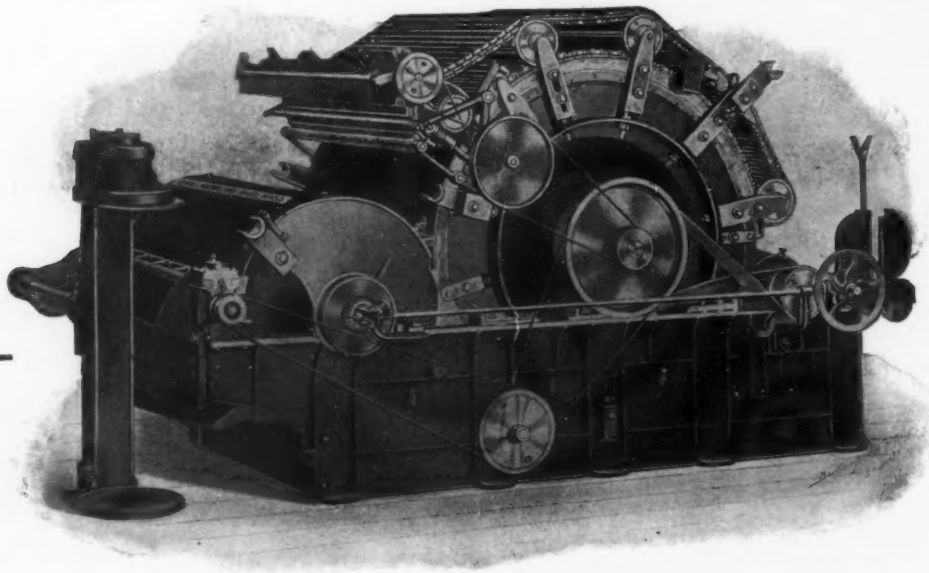
FIBRE

BRASS CHILLED IRON RUBBER

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

BLEACHING, DYEING, DRYING AND FINISHING MACHINERY FOR SILK, COTTON AND WORSTED FABRICS.



Cotton and Worsted Machinery

With Modifications to Suit Any Class of Work.

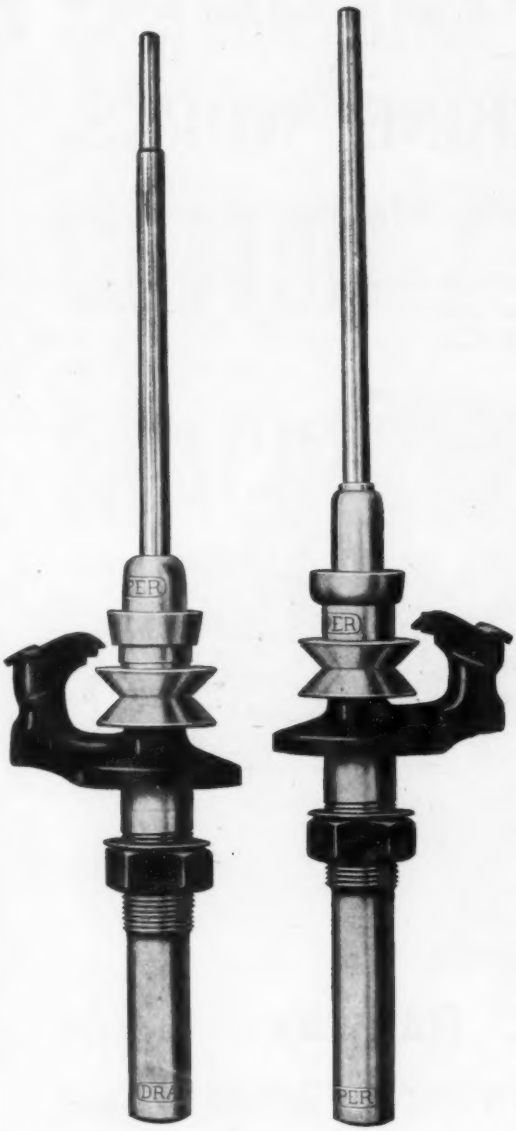
Cotton Machinery: Cards, Railway Heads, Drawing Frames, Fly Frames, Speeders, Ring Spinning Frames, Twisters, Spoolers, Reels, Warpers, Slashers, Winders, Looms, Shearing Machines, Balling Machines, Folders, Stamping Machines, Sewing Machines, Size Pumps, Size Kettles, Drawing-in Frames, Baling Presses, Indigo Grinders.

Worsted Machinery: Spinning Frames with caps, rings or flyers, Dandy Rovers and Reducers, Cone Second Finishers, Reducers and Rovers, Gill Boxes for Drawing, Preparing and Finishing, Weigh Boxes and Drawing Boxes, Cap Trap, Flyer and Ring Twisters.

Plans, Specifications and Estimates furnished upon application.

Lowell Machine Shop

LOWELL, MASS.



Two New
Large Size
Spinning Spindles.

We make

Draper,
Whitin,
Saco Pettee,

and other
types of

Spindles;

also

Northrop Looms,

Twisters,
Warpers,
Spoolers,
Reels,

Banding Machines,

etc., etc.

Draper Company,
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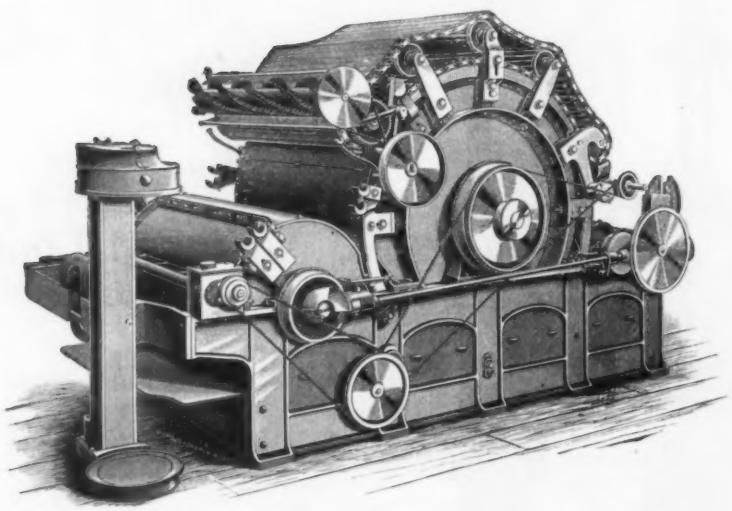
MASS.

Cotton Machinery

MASON MACHINE WORKS,

TAUNTON, MASS.

Southern Office,
Charlotte,
N. C.



Cards,
Combers, Railway
Heads, Drawing Frames
Spinning Frames, Mules and Looms

INCLUDING

Plain and Fancy Silk Looms

Saco and Pettee Machine Shops

NEWTON UPPER FALLS, MASS., U. S. A.

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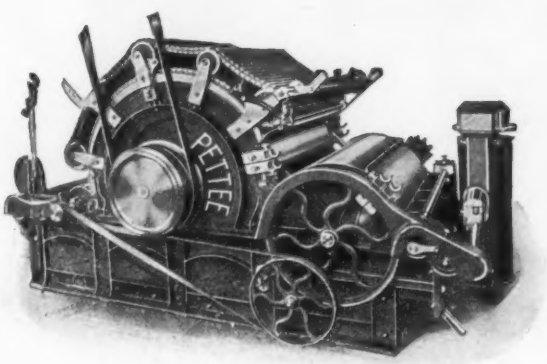

Pickers,
Revolving
Flat Cards,
Drawing
Frames,
Railway Heads,
Slubbing,
Intermediate
and
Roving
Frames,
Spinning Frames,
Spoolers
and
Reels.

Shops—

Biddeford, Me.

Newton Upper Falls, Mass.

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THE

WHITIN MACHINE WORKS,

Cotton Machinery

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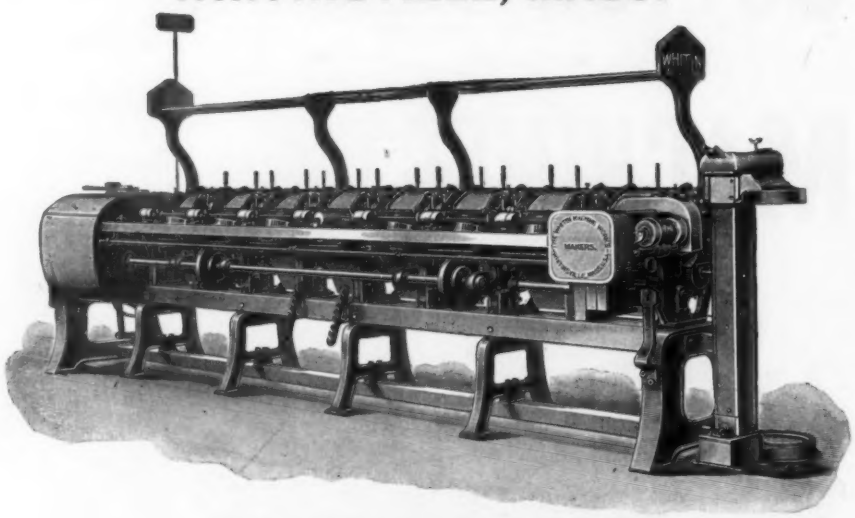

HIGH SPEED COMBER 1906 MODEL.

Revolving Flat Carding Engines,
Sliver Lap Machines,
Ribbon Lap Machines, Combers,
Railway Heads, Drawing Frames,
Spinning Frames, Spoolers, Twisters,
Long Chain Quilling Machines, Reels, Looms.

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S. W. CRAMER

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Equitable Building, ATLANTA, GA.

"Kitson Products"

Blowing Systems

For Conveying Bale Cotton
from Storehouse to Picker-room

Self-Feeding Openers
Lappers and
Cleaning Trunks

Waste-Working Machinery

Raw Stock Cotton Dryers

We own the Patterns and can furnish REPAIR PARTS for PICKERS
formerly built by

WHITEHEAD & ATHERTON, . Lowell, Mass.
ATHERTON MACHINE CO., - - Lowell, Mass.
A. T. ATHERTON MACHINE CO., Pawtucket, R. I.

Kitson Machine Shop

Lowell, Mass.

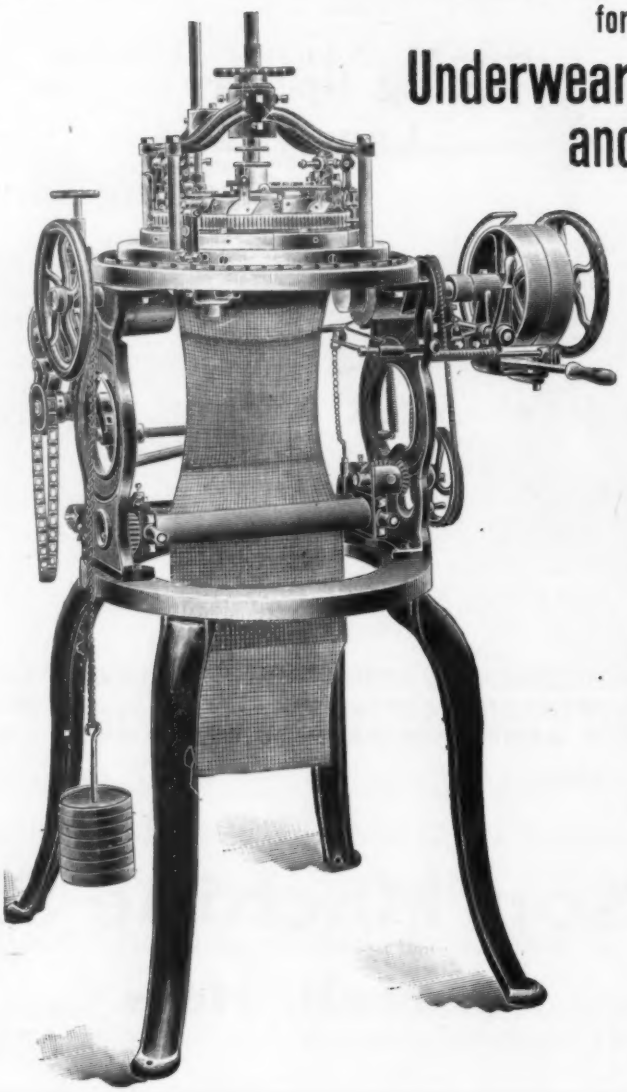
SCOTT & WILLIAMS

2079 E. Cumberland Street, Philadelphia, Pa., U. S. A.

BUILDERS OF

Full Particulars, Samples and Special Catalogues on Application.

Rib Knitting Machinery for Underwear and Hosiery



Plain, Single Lever or with Welt, Slack Course and Automatic Slackening Device for Welt.

Improved Measuring Device, by actual length knit.

Sizes 8 to 24 inches, inclusive, varying by one inch.

Number of Feeds, 4 to 12, according to style and diameter of machine.

Solid Forged Steel Cylinders, specially hardened or with patent inserted walls for fine fabric.

Special Machinery for Sweaters, etc.

We build Loopers, Ribbers and other Machinery for Knitting Mills

As well as

A Complete Line of Full Automatic and 7-8 Automatic Seamless Hosiery Machinery.

The illustration shows our

Improved High Speed Single Lever Automatic Ribbed Underwear Machine

for making ladies' and gents' ribbed underwear, union suits, etc., plain and shaped.

OUR NUTAPER CONE TUBE

has more taper than any other. Knitting concerns that have tried it declare the delivery perfect, and many, who spin their own yarn, have given us orders for full equipments of No. 50 self-oiling winders.

High speed machines for all classes of winding made with interchangeable parts throughout.

Universal Winding Co., Boston.

Shuttles for all Textile purposes and Sundry Special Loom devices

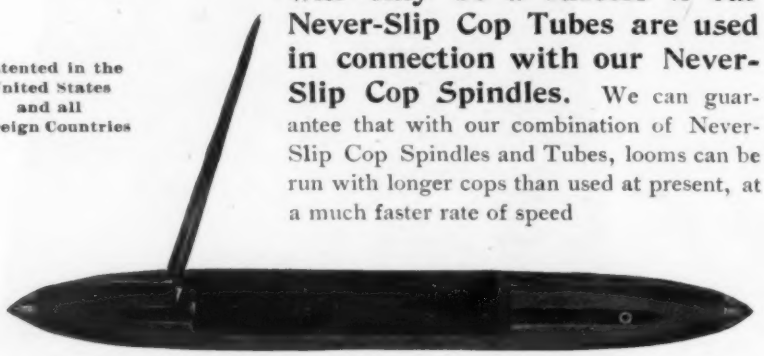
Never=Slip Cop Spindles and Tubes

Never-Slip Cop Tube

Patent applied for

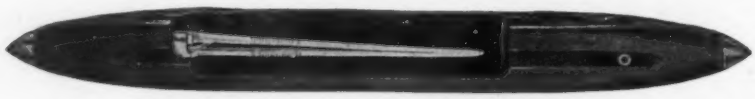
Patented in the United States and all Foreign Countries

Filling-Waste is reduced to nothing and long Cops will only be a success if our Never-Slip Cop Tubes are used in connection with our Never-Slip Cop Spindles. We can guarantee that with our combination of Never-Slip Cop Spindles and Tubes, looms can be run with longer cops than used at present, at a much faster rate of speed



Shuttle with Spindle Raised

U. S. Patents: 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending



Shuttle with Spindle Lowered.

U. S. Patents: 778851, Jan. 3, 1905; 79611, May 23, 1905; other patents pending

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American Textile Specialty Machinery Co.

363-373 Rider Avenue, New York City

NEAR MOTT AVENUE SUBWAY STATION

Electric and Automatic

Warp Stop Motion for Silk, Wool and Cotton

Simplicity! *Perfection!*

EVAN ARTHUR LEIGH

232 Summer Street (opposite the South Station), Boston, Mass.

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IN THE UNITED STATES AND CANADA FOR

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BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber will comb from 7-8" stock to Sea Islands.
Platt's Special Machinery for Making Cotton Waste into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery.
Archbutt-Deeley System for purifying and softening water.

TEXTILE MACHINERY ASSOCIATION, LTD.

Flax, Hemp and Jute Machinery.

GEORGE HODGSON, LTD.

Looms for Worsteds, etc.

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Patent Feeding Machines for wool, cotton, flax, fur and fibrous material.

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Card Clothing for Cotton.

JAMES CRITCHLEY & SON'S,
Card Clothing for Woolen and Worsted.

DRONSFIELD BROS'.

Grinding Machinery and Emery Filleting. The Best French and English Combing and Rubbing Aprons. Harding's Pins and Circles. Varey's Fallers, etc.

Jacob K. Altemus is

Able to supply the best

Cop Winding Machinery

Or Hosiery Winders and more in particular

Bobbin Winders,

Keep in mind that I

Always produce machines that are right

Letting nothing go out

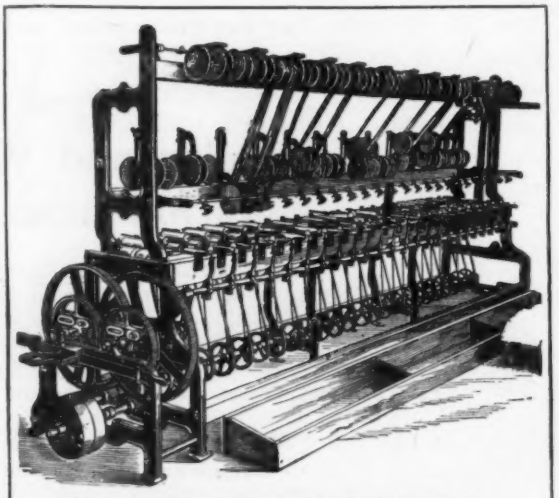
That is not satisfactory before delivery.

Every

Manufacturer should investigate warping and beaming machinery, warp splitting as well,

Upright Spoolers, Quillers, Warpers, Twisters, etc.

Send for full information and prices.



The Greatest Bobbin Winder for Skeins Ever Built.

Textile Machinery

2824 N. 4th St., Philadelphia, Pa,

THESE

Water Towers

Are furnished by

Tippett & Wood

They provide a storage for water under pressure, and are valuable for fire protection and personal uses

The T. & W. Towers do not fall or leak.

All Sizes Built

Plans and prices given on application.

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Phillipsburg, N. J.

Two good textile devices

The Schaellibaum Grid.
The Grid with a Comb.

Combs the cotton in the lapper, extracts more dirt with less waste and produces an evener lap than any other.

Where utmost cleaning is desired, we waste less than ¼ of 1% in lapping room—otherwise none at all. Takes work off the cards. Gives greater production. Thirty days free trial.

Patent Collar Board or Bolster for Woolen and Cotton Mule Spindles

Simple but a revolution.
Only requires re-lubricating once a year.

The spindles run in a lubricant all the time, doing away with the old time continuous oiling.

Has a life of from 5 to 10 times longer than any other and the spindle always runs steadily. Thirty days free trial.

Write us for full information.

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Providence R. I., U. S. A.

Correspondence in English, French, German, Italian and Spanish.

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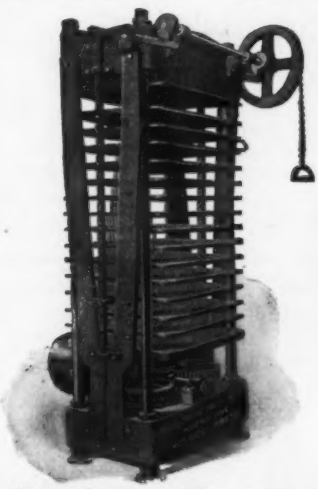
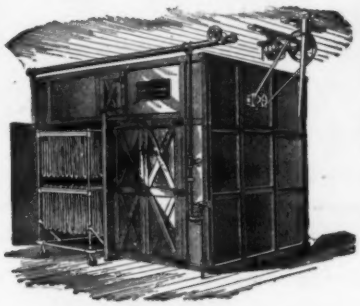


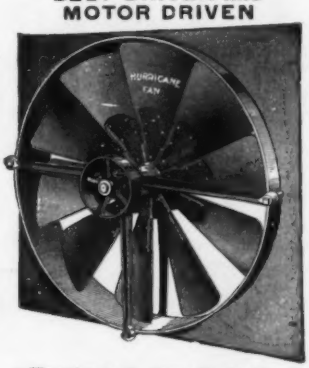
Power Screw, Hydraulic and Lever **Presses**

For Wool, Cotton Stock, Yarn, Stockings, Underwear, Etc.



Truck Yarn Dryer.

BELT DRIVEN AND MOTOR DRIVEN



"Hurricane" Fan, Style No. 3. Write for Catalogues.

COMPLETE EQUIPMENTS FOR DYEING, SCOURING, BLEACHING, CARBONIZING, OXIDIZING, CHROMING, Etc.

PHILADELPHIA DRYING MACHINERY CO.

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The Jackson Way is the Only Way

to lace a belt if you want to do it quickly, cheaply and thoroughly.

The

Jackson Belt Lacer

will lace a 5" belt in less than three minutes at a cost of less than one cent, and the work will be faultless! Furthermore, the Jackson way permits a belt to be taken apart and shortened or lengthened, just as you wish, in a few seconds. And the lacing is unusually tough, 1900 tensile strain has failed to break or pull it apart. Yet so compact is the stitch that it passes over the smallest pulley without noise, slipping or friction.
Write to-day for free belt lacing proposition.

Birdsboro Steel Foundry & Machine Co.

Birdsboro, Pennsylvania.

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Increases Production, Improves Quality, Decreases Labor Cost.

The Apperly Feeder

FOR SECOND BREAKER AND FINISHER CARDS.

This machine was originally brought to this country and introduced against great opposition, by the founder of this concern, the late Geo. S. Harwood. To-day there are about 15,000 machines of our construction running in this country and Canada. We have greatly improved the machine. It is to-day an efficient, positive and up-to-date feed, and we can offer manufacturers the choice between the ***Kemp Positive Geared Traveler*** and the ***Standard Traveler*** with all other recent improvements.

Call on us for particulars and information about all matters relating to Feeding Machinery.

GEORGE S. HARWOOD & Son,

53 State Street, Boston, Mass.

Cloth Washers, Dye Tubs, Vats, Fulling Mills,
Piece Dyeing Machines, Special Machinery,
Brass Founders, Tanks, To Order.

Hopkins Machine Works, Inc.

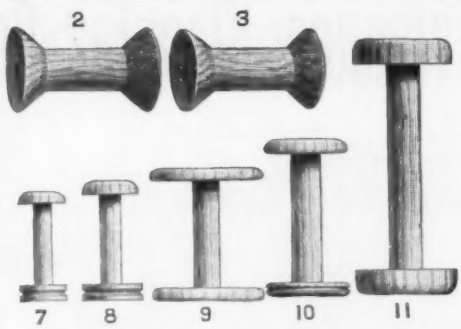
BRIDGETON, R. I.

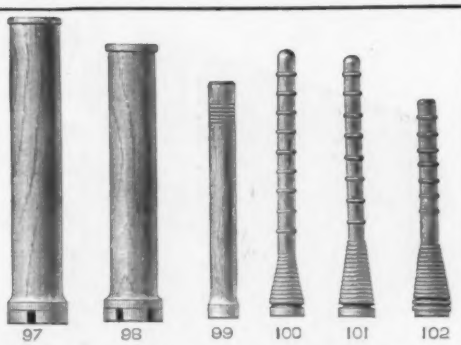
Providence Office, 49 Westminster St.

Spindles and Flyers, for Cotton, Wool, Silk, Flax, etc.

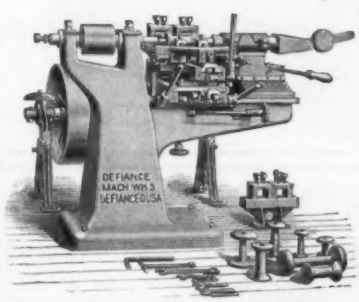
Send for our latest Catalogue and Price List

Dye Tub Valves, Cloth Guides, etc.
Bronze or Porcelain Rings.



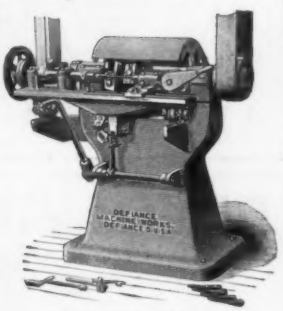


SPOOL AND BOBBIN MACHINERY



AUTOMATIC SPOOL TURNING LATHE

Complete Equipment
OF THE
MOST MODERN TOOLS
25% SAVED
Over the Old Methods
Send for Catalogue and Particulars to
THE
Defiance Machine Works,
DEFIANCE, OHIO



AUTOMATIC BOBBIN LATHE

Fairbairn Lawson Combe Barbour, Ltd.

Lawson Branch

Hope Foundry. **Leeds, England**

MAKERS OF MACHINERY FOR

Preparing and Spinning

Flax, Hemp, Tow and Jute

Special Machinery

for the Manufacture of

Twines, Rope Yarns and Binder Twine

Good's Combined Hackling and Spreading Machine.

Long Reach Screw-Gill Drawing Frames. Chain-Gill Drawing Frames with Apron Heads.

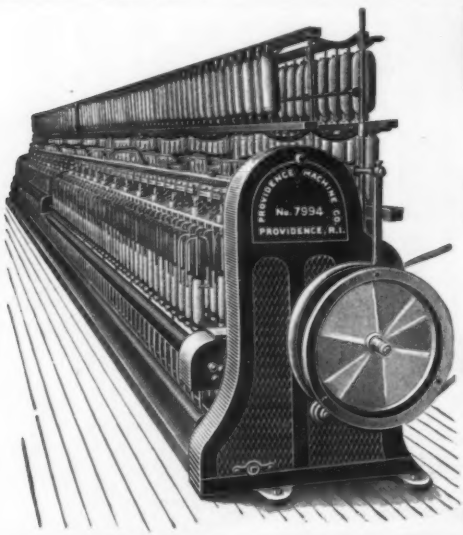
Patent High-Speed Horizontal and Automatic Spinning Frames for Manila.

Improved Laying Machines.

Haskell-Dawes Tubing Twisters.

Brownell's Patent Twisting and Laying Machines for Twine.

Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.



Providence Machine Co.

Manufacturers of

Improved Cotton Roving Frames

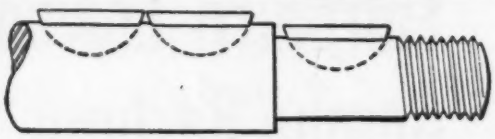
Improved Worsted Roving Frames

564 Eddy St., - - PROVIDENCE, R. I.

REVOLVING FLAT CARD BRUSHES

S. A. Felton & Son Co. FOR USE ON ALL MAKES OF REVOLVING FLAT CARDS Manchester, N.H.

Key Seating Attachment FOR Whiton Gear Cutter



We offer an attachment for use with our Gear Cutting Machine, to cut key seats for the Woodruff System of Keying. Write for description, circulars and price.

THE D. E. WHITON MACHINE CO.,
19 Oak Street, New London, Conn.

THE L. M. BOWES COMPANY,

Every Description of Fine Leather for Textile Use.

SOLE AGENTS IN THE UNITED STATES FOR

CHARLES CAIN, SON & GREENWOOD,
HALIFAX, ENGLAND.

MAKERS OF HIGH GRADE

CARD CLOTHING

For Cotton, Woolen, Worsted and Silk.

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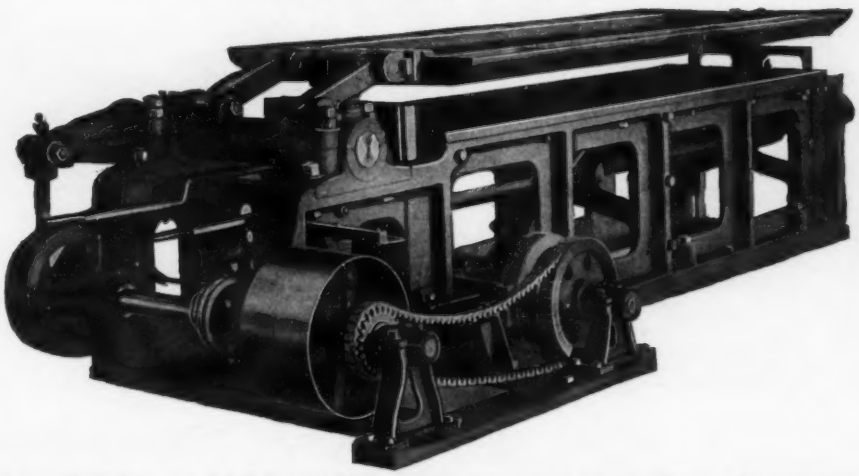
Farrel Foundry & Machine Co.

ANSONIA, CONN.



SINGLE AND DOUBLE FELT HARDENERS.

Chilled and Soft Iron Rolls. Heavy Transmission Machinery.
Machine Moulded and Machine Cut Gearing, to 20 ft. diameter, Etc., Etc.
Heavy Castings, in Gray Iron or Semi Steel.

CHARLES S. BARTON, Pres. and Treas.
GEORGE S. BARTON, Secretary.

Established 1837.
Incorporated 1867.

Rice, Barton & Fales Machine and Iron Company.

MANUFACTURERS OF

Printing Machines

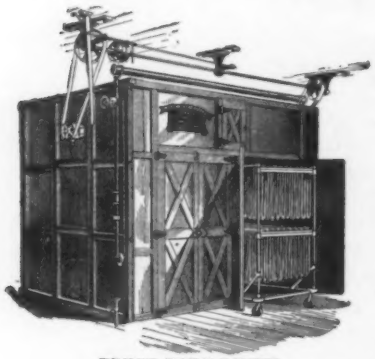
From ONE to FOURTEEN COLORS,
for ALL KINDS OF FABRICS.

ALSO

Duplex Printing Machines, | Forcing Machines,
Color Kettles, | Copper Printing Rollers,
Winders for Greys, etc.

WORCESTER, MASS., U. S. A.

"20th CENTURY" MACHINERY

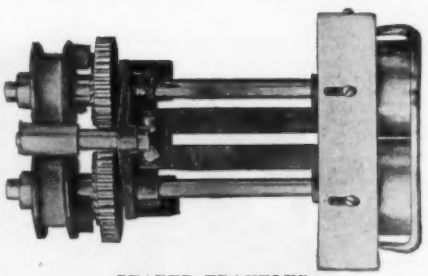


TRUCK YARN DRYER

Dryers for Wool and Cotton Stock, Yarn, Stockings and Underwear.

Carbonizers, Yarn and Wool Scouring Machines.

Ventilating Fans, Bleachers.



GEARED TRAVELER.

We also manufacture Kershaw's Geared Traveler and Improved Web Feed.

Garnett Machines and Pickers. Reclothing or furnish New Metallic Toothed Cylinders and Feed Rolls.

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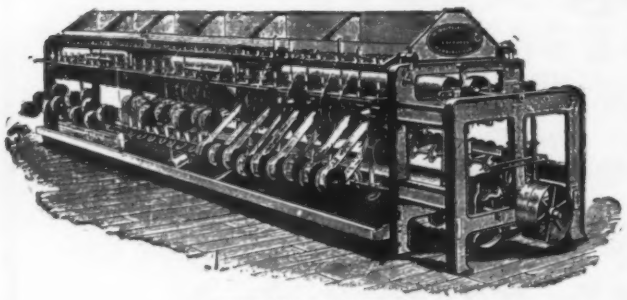

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Makers of all descriptions of Tentering and Drying Machines.

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Crabbing or Winding-on Frames.

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Second-hand Tentering Machines in good repair at low prices.

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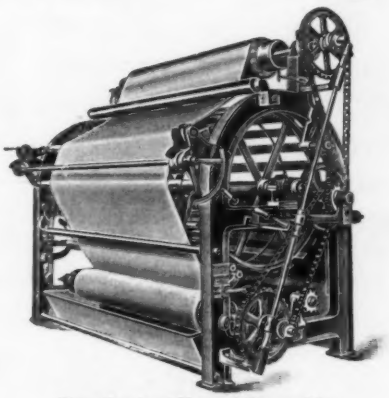

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The Best Yet

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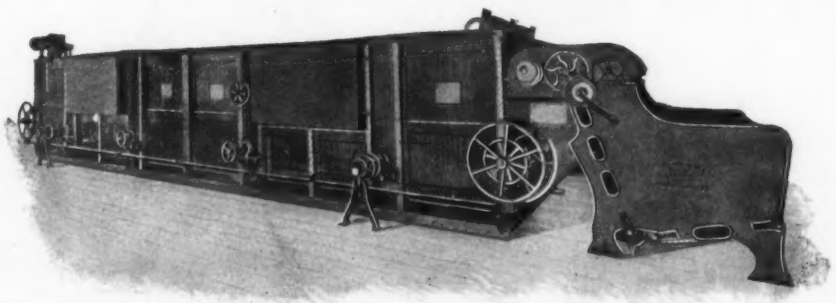

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Stock Dryers, Wool Washers,

Wool Dusters, Carbonizing Plants,

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The goods that might have been made.

The profit lost because they were not.

Production determines cost

The operating expenses of your mill have to be charged against the yardage produced be it large or small. If looms are standing idle waiting for warps to be drawn in—a condition of frequent occurrence in many mills—then your cost increases and your profit decreases and sometimes disappears.

The Barber Warp Tying Machine

does away with drawing-in troubles by its rapid and perfect work. The kind, number or condition of the harnesses matters not, the warp ends are tied at the rate of 250 knots a minute. Increases output and effects a very material reduction in cost. Call and see one in operation at our sales room.

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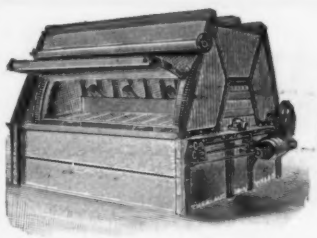

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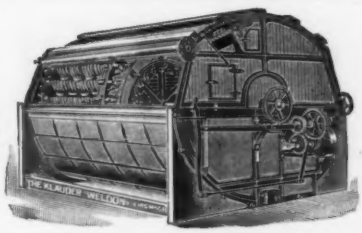

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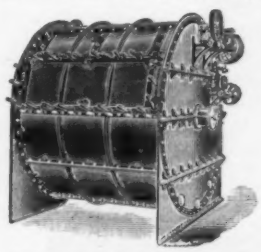
Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins—Slubbing—Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.



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Special Machines for Sulphur Colors

WILL EARN THEIR COST IN
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IN FROM
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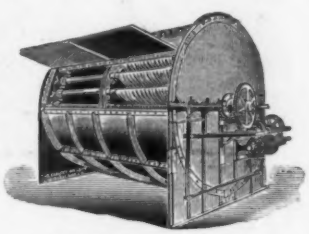
ACCORDING TO CAPACITY



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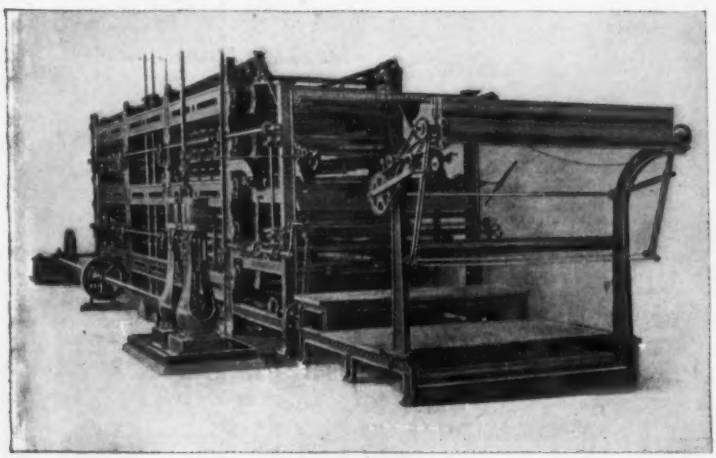
TENTERING AND DRYING MACHINES

WITH LOW DOWN FEED. **PATENTED FEBRUARY 26, 1895.**



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Cylinder or Balance Gate Casing

Least Water,
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Complete Equipments

We make Special Designs to meet TEXTILE MILL conditions.

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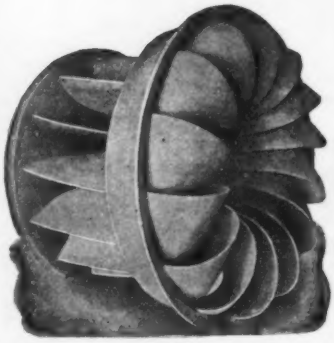

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FOR WOVEN AND KNIT GOODS

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The "STONE DRYER," for Wool, Cotton, Rags, Etc.

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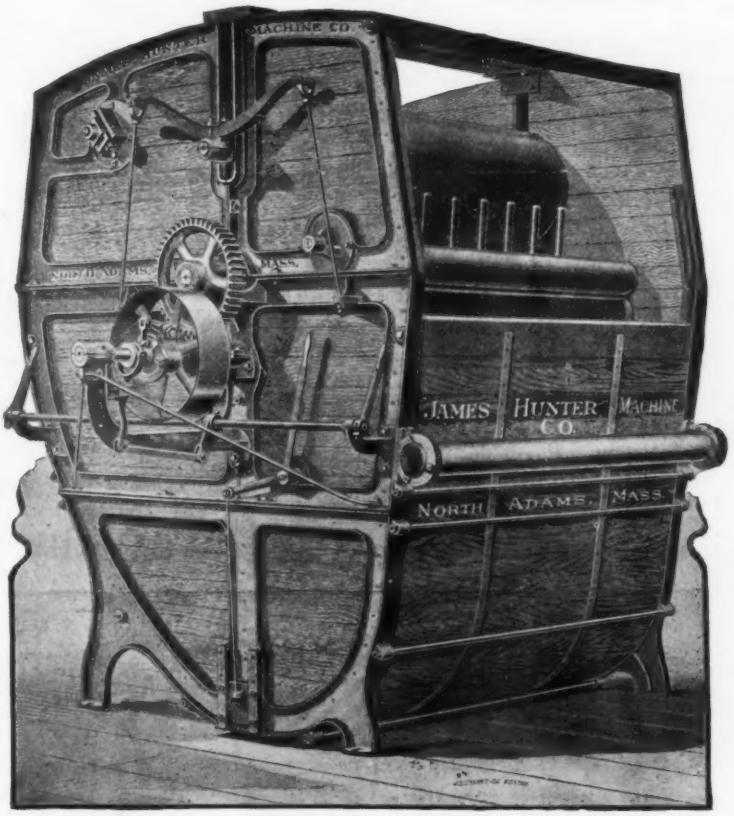

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WOOL OPENERS, SELF FEEDS, DUSTERS

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Loose Shields Impossible.

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Greatly increase capacity and permanent efficiency of steam turbines.

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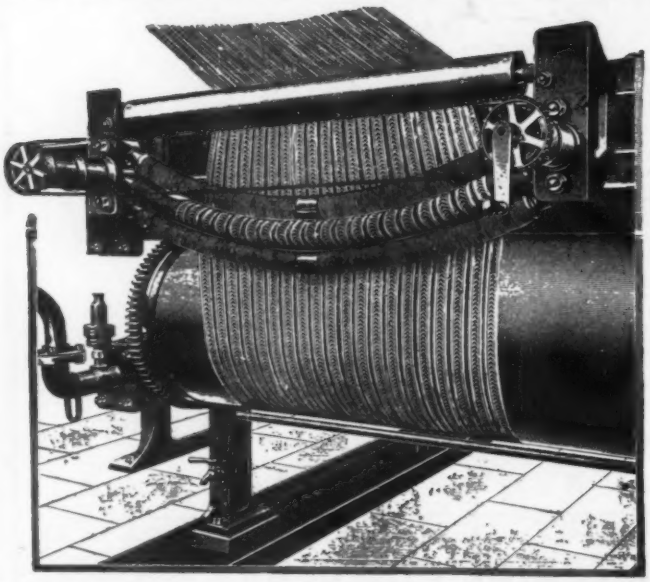
A PERFECT CLOTH EXPANDER



The recent invention of Wm. Mycock, an English cotton manufacturer. Hundreds sold in Great Britian and on the Continent. Large bleacheries in this country where it has been placed on trial are delighted with it. Gets the full width of goods, with perfectly even tension both ways. Can be attached to calenders or cans. Put it on trial.

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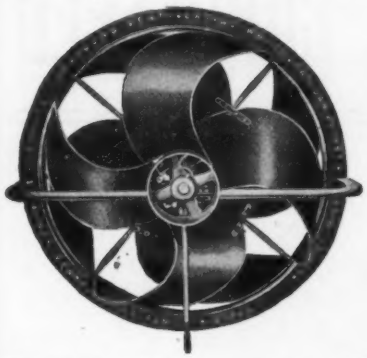
Barney Compound Ventilating Fans Ventilate, Purify, and Dry.



Notice the compound feature—it does the work. They force out all atmosperic impurities and draw in pure air. They often double capacity of drying rooms, expel loose steam from dye houses—preventing condensation, *cool spinning rooms.*

The Barney System is the most economical.

TELL US YOUR PROBLEM.
WRITE TODAY. FREE TRIAL OF FAN.

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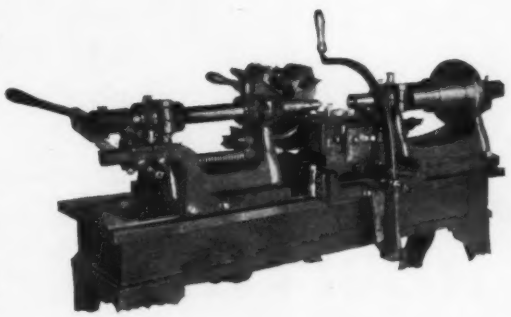
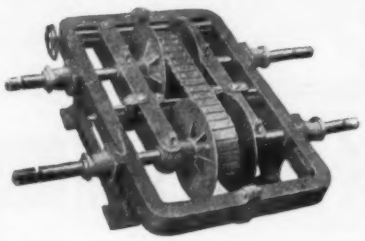
Spool and Bobbin Machinery



that enables textile manufacturers to produce their own spools and bobbins with saving and satisfaction. Tell me what capacity you require and I will tell you of the machine that will meet your requirements and what it will cost.

J. W. MURKLAND, Manufacturer of Spool and Bobbin Machinery **BARTON, VT.**

The Reeves Variable Speed Transmissions are giving many textile manufacturers the "more-profit" speed



More and more textile manufacturers are coming to realize the importance of quick and accurate speed control in the various departments of their mills. Don't let the dollars slip away—run every machine at its proper speed all the time. Improves product and increases profit.

After thoroughly testing, a prominent Lowell Mill recently ordered a carload of Reeves Valuable Speed Transmissions for use in their finishing and dyeing departments. They would save money in yours. Write for proof.

Reeves Pulley Company,
Columbus, Indiana.

Special New England Representative,
ELLIOTT F. ALDRICH, Box 21, Providence, R. I.

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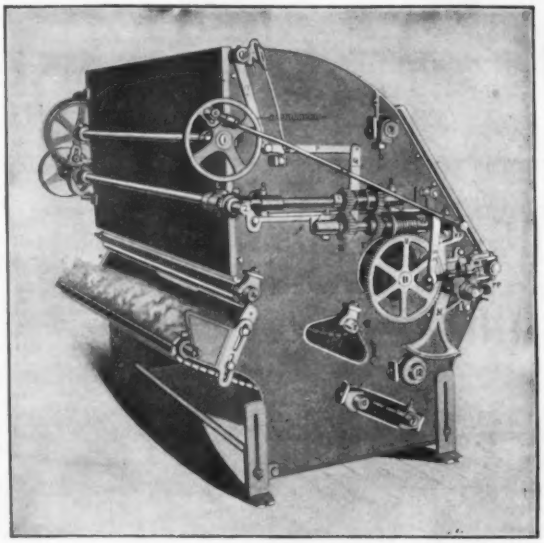


Write Us For List of Mills Where Machines Are Used.

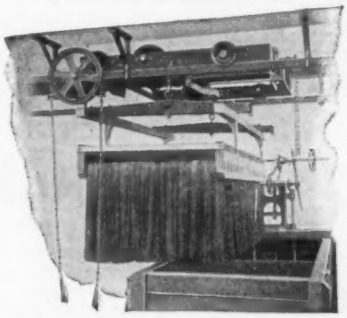
Woonsocket Machine and Press Company

WOONSOCKET, R. I.

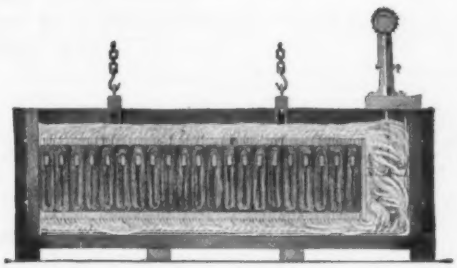
The Hussong Dyeing Machine

Patented Nov. 6, 1900. April 9, 1901. Nov. 29, 1904. June 5, 1906.

THE ONLY MACHINE THAT WILL DYE SUPHUR BLACK SUCCESSFULLY.



This illustration shows our Compressed Air Hoisting Carriage, with 300-pound Yarn Machine suspended.



Longitudinal Sectional View, showing the circulation of dye-liquor through the yarn when in operation

Points of Superiority Which We Claim for the Hussong Machine.

Durability, Even Dyeing, Saving of Steam, Saving of Dyestuff,
Saving of 75% in Labor, Makes No Waste Whatever, No Friction on the Material.
Requires but Little Power to Operate.
Leaves the Yarn and Slubbing it its Natural Condition.

Built by the **American Dyeing Machine Co.** Office 609 Pearl St., Camden, N. J.

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WROUGHT STEEL PULLEY

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Is a parting PULLEY and can be applied without stripping the shaft.
It is Light, STRONG, and lasts a lifetime.
It clamps to the shaft perfectly — keys and set-screws superfluous.
Interchangeable metal Bushings to fit shafts of different sizes.
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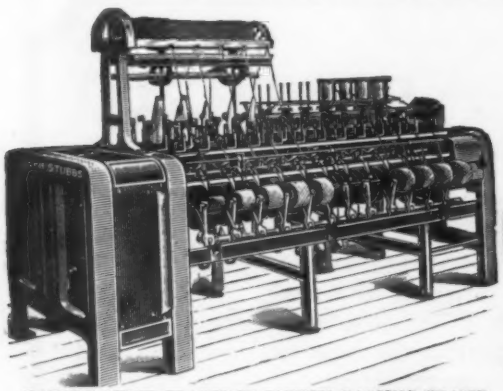
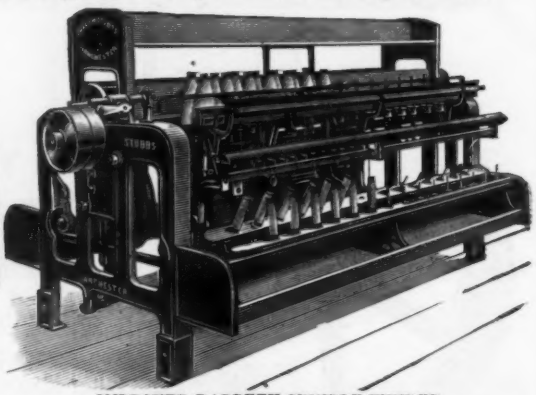
SPECIAL MACHINERY

For Winding, Gassing, Reeling, Preparing, Polishing and Bundling Yarns.



PATENT QUICK TRAVERSE COTTON GASSING FRAME.



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With Patent Tapering Motion, for Single Flanged Bobbins.

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AMMONIATED POTASH SALTS FOR SCOURING.

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FREE SAMPLE SENT FOR TRIAL ON REQUEST.

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Received the HIGHEST AWARD on recommendation of the FRANKLIN INSTITUTE for

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The Only Perfect System of Air Moistening

And Has Been Adopted by the Representative Manufacturers of this Country.

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THE BEST FIRE HOSE MADE.

(Trade Mark.)

For use in

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Seamless Woven and Rubber lined EUREKA COTTON HOSE, has no equal. Send for circular and testimonials.

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Run true on card table—
have a very smooth finish

which allows the roving to be drawn from the can with practically no resistance, thus avoiding broken ends.

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are light in weight, rigid, strong and very durable. Made of the best chemically treated fibre with tinned soft steel rings, accurate in size and perfectly round. Get our prices.

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EVANS' FRICTION CONES.

Eight Thousand Sets in Operation in This Country and Europe.

A partial list of manufacturers who have Evans' Friction Cone Pulleys in operation, transmitting from ONE TO FORTY HORSEPOWER:

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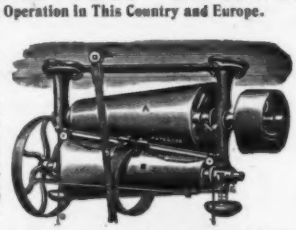

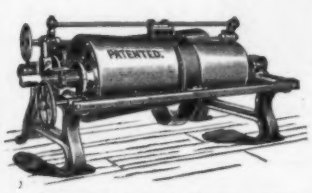

Smith & Winchester Co., So. Windham, Conn. 250 sets. Furguson & McRae, Belfast, Ireland, 25 sets. Mercantile Laundry, So. Windham, Conn., 250 sets. Washburn & Moen, Worcester, Mass., large number, all sizes. Dennison Tag Co., Boston, Mass., large number, small sizes. Saco & Pettee Machine Co., Newton, Mass., 278 sets. Pacific Mills, Lawrence, Mass., 13 sets.

Send to **G. FRANK EVANS, 1288 Center Street,** Newton Center, Mass., for Illustrated Catalogue.

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NEW FEATURES; Wearing Parts, Valve and Seat Renewable.

Class A Return Trap

We manufacture Steam Traps for all duties, High and Low Pressures, returning the Condensation back into Boiler or Discharging to Hot Well, Tank, or Atmosphere.

No Elastic Gaskets, all Joints Ground Metal and Metal.

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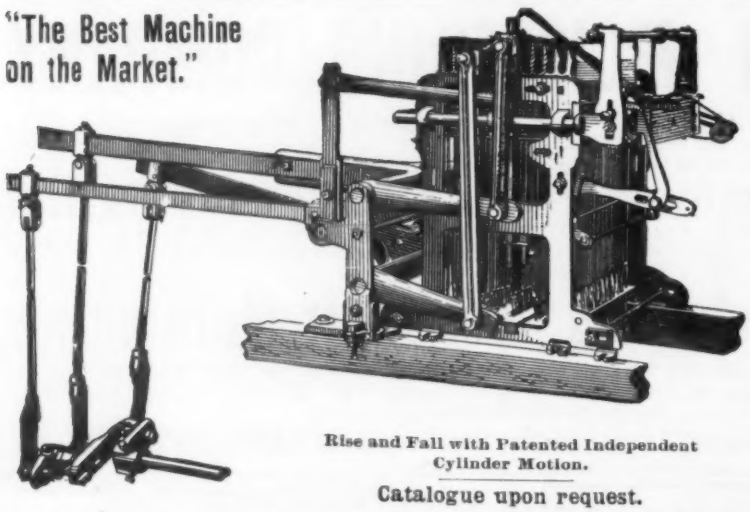
ALBANY, N. Y.
Established 1870.
FRED'K TOWNSEND, Pres. JAMES H. BLESSING, Gen. Mgr.

"The Best Machine on the Market."



Rise and Fall with Patented Independent Cylinder Motion.

Catalogue upon request.

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Original Fine Index Machines

Single Lift, Double Lift, Double Cylinder, Rise and Fall, Crossborder,

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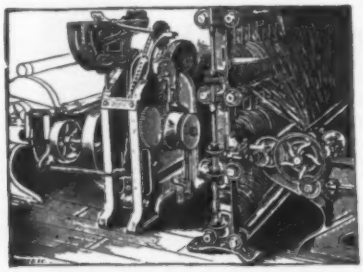

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HARRISON, N. J.

TORRANCE PATENT AUTOMATIC BALLING MACHINE

With all the latest improvements for Wool Cards. The latest and best and only Feed that will make yarn positively even.

ALSO

CHOQUETTE WASTE SAVER. Saves card fly

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STEAM USERS of this country have upwards of 90,000 Steam Boilers under the inspection and insurance supervision of this company.

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FOR ALL PURPOSES WHERE A NUMBER OF ROWS OF SEAMS ARE REQUIRED

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NASMITH Finest Quality

Less Waste **COMBERS**

Combs any length of staple.

600 SOLD to the largest and finest mills in England and on the Continent.

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Set of 6 Combers, 10½ in. Lap
of 6 heads each.

4500 to 5200 lbs. per week of 53 hours. The floor space required for set of 6 Nasmith Combers, 1 Ribbon and 1 Sliver Lap Machine is 662 square feet.

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Messrs. John Hetherington & Sons., Ltd. sole manufacturers of the Nasmith Combers are in a position to promptly fill all orders having recently trebled the size of their comber plant. Send for catalogues. Full line of parts constantly in stock.

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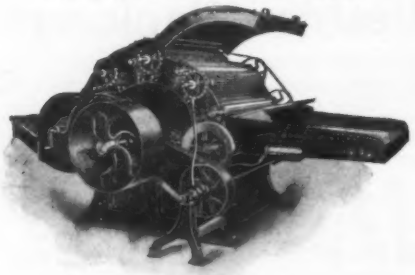

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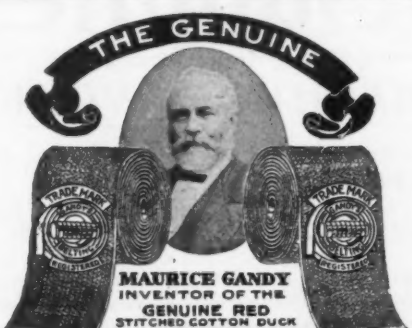

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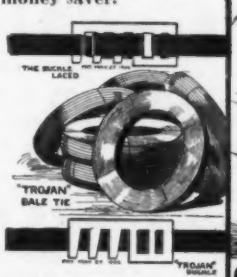

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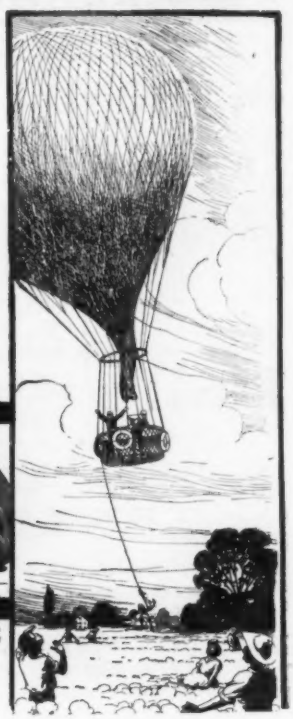

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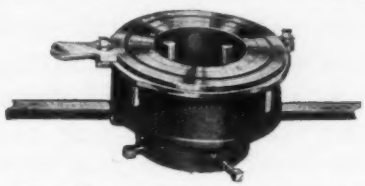

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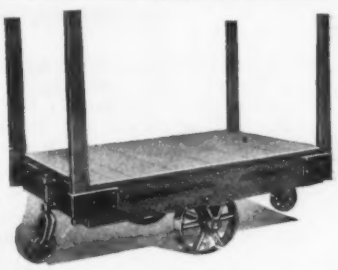

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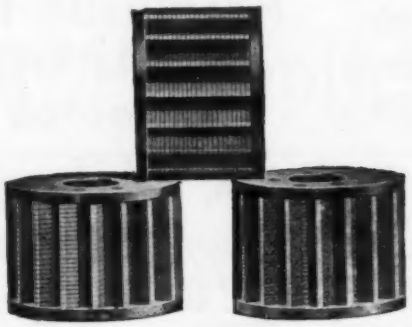

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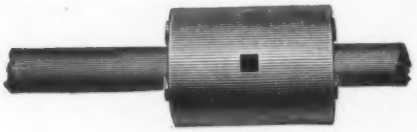

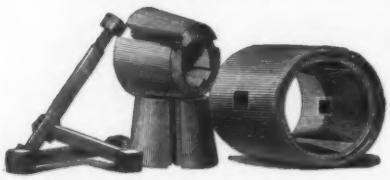

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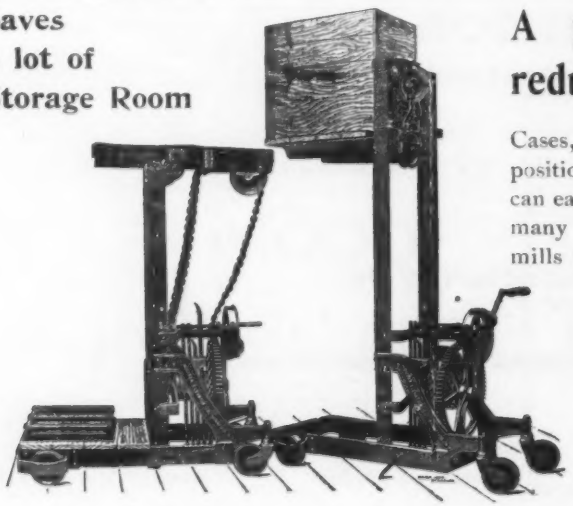

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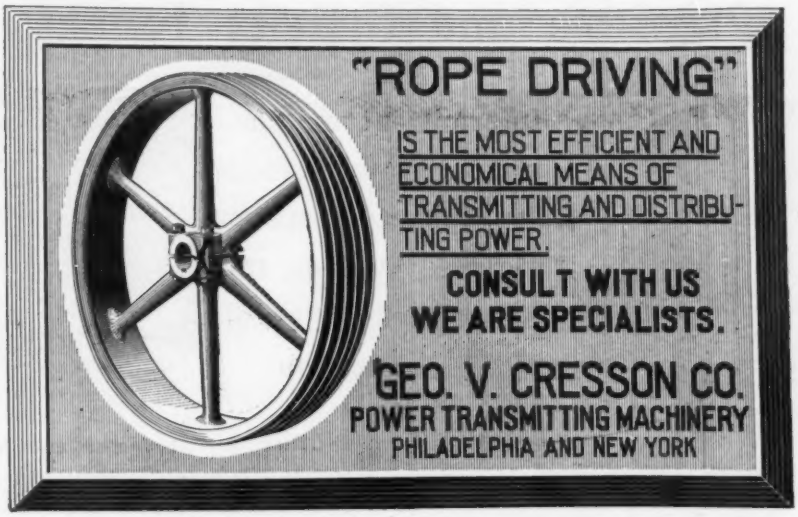
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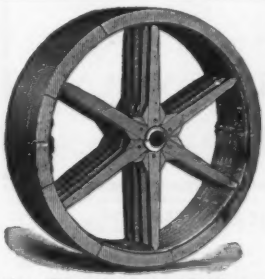

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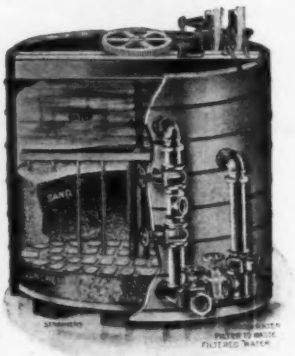
Intermittent and Continuous Water Softening Apparatus, manufactured under the Hungerford System of Water Purification.



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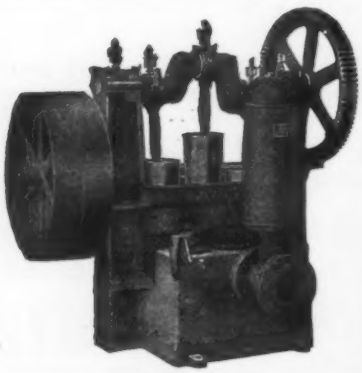

THE NATURAL RESULT

Of over rating lightness of construction and the desire to place on the market a pump that is cheap—is seen in the fact that during the past month we have replaced four pumps of other makes with

Goulds Efficient Power Pumps

We manufacture a complete line of Triplex Pumps for every service and will be pleased to send catalog on application.

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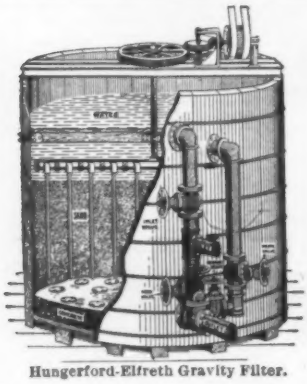

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HUNGERFORD-ELFRETH

FILTERS PRESSURE and GRAVITY

WATER SOFTENERS INTERMITTENT and CONTINUOUS

There is only one Filter, the

HUNGERFORD - ELFRETH,

the only filter which exceeds its guarantee.

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Philadelphia Water Purification Company,

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"I can't get out Blank & Co's. order this week."

"Why not? It must be gotten out. I promised it."

"I know, and I promised it to you, but the blank belt has broken and we will be a day or more getting another in place."

"Can't you find another excuse but belts, belts, belts."

Not while you insist on using the same kind of belting your grandfather used."

"Well, what do you want?"

"I want Leviathan Belting, made by the Main Belting Co., of Philadelphia, Pa.,—more than half the trouble with belts will be saved, and they cost less too.

Use Peerless Motors for Special Service

The PEERLESS ELECTRIC CO., Warren, O.

Designers and Manufacturers of Direct Current Motors for any service.

Water?

Do you know what our proposition on

SOFT WATER

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FOR THIRTY YEARS THE NAME

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HAS STOOD FOR

THE FACTORY ELEVATOR

We now propose to make it stand just as unquestionably for

THE HAND ELEVATOR

And ask you two questions:

1st—Do you believe we can make good?

2d—Wouldn't a hand elevator that will carry your goods safely and without trouble for a generation be a good investment?

IF YOUR ANSWER IS *YES*
WRITE FOR PARTICULARS TO

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Department of Otis Elevator Co.
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(Headquarters for Hand Elevators)
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A SMOOTH MILKY EMULSION

always obtained with

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Samples mailed for demonstration upon request.

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For QUALITY OF FINISH
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CANVAS MILL BOXES

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Extra quality heavy weight Cotton Duck forms sides and bottom of the Lane Basket. It is hard woven, impenetrable and has enormous strength and wearing qualities, as all users of Lane Baskets well know.

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Sold by Principal Mill Supply Houses.

Poughkeepsie, N. Y.

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With Renewable Hard Wood Shoes. The basket for hard service.

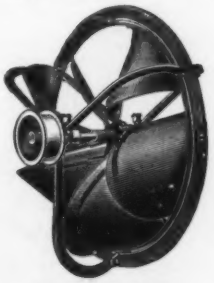
"Prevention is better than cure."

Your pocketbook will never bulge with the profits *that might have been made. Now* is the accepted time—get busy today and use

A Berry Wheel

Very efficient and economical for drying,

This is our Berry Wheel, the most effective agent for moving air, eliminating steam and other impurities in the atmosphere.



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23 West First Street,
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Established 1841.

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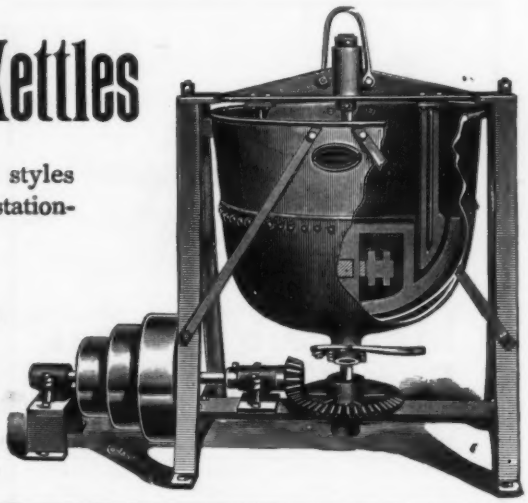
This cut represents one of our many styles of steam mixing kettles, made with stationary and removable stirrers.



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Badger Fire Extinguisher.

Finishing, Dyeing, Sewing, Machines

BIRCH BROTHERS, SOMERVILLE, MASS.

ALBERT BIRCH, TEXTILE MECHANICIAN

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Hydro-Extractors, Exhaust Fans, Dye Tanks and Tubs.

Adjusts itself to an uneven load, runs without vibration. Unusual capacity for high-class work.

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Fulton St. and 6th Ave.,
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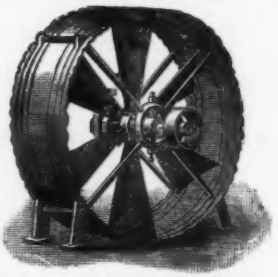

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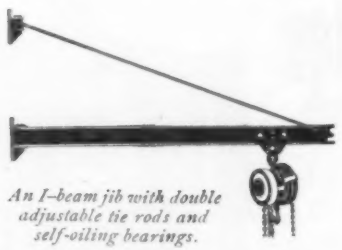

An I-beam jib with double adjustable tie rods and self-oiling bearings.

Light Jib Cranes For Machine Shops

While most used to increase the usefulness of individual hoists over machines in the shop, these jib cranes afford good service under many conditions in the factory for handling heavy parts needing frequent inspection and repair. Also used on loading platforms, etc.

These cranes are easy to put up, simple and durable. They are adapted for either Yale & Towne Chain Blocks or Electric Hoists. Capacity up to 3 tons; reach 10 to 15 feet; radius 180 degrees. May be furnished complete with hoist and trolley. See your dealer.

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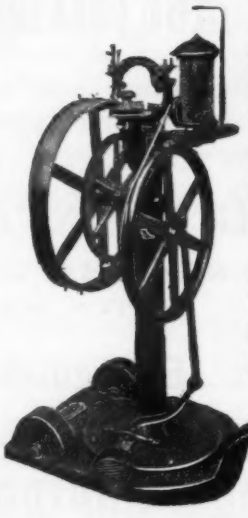

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No. 9.—Portable Foot-Power Rotary Sewing Machine

It is especially adapted for use in Cotton and Woolen Mills, Bleacheries, Print Works at the Printing Machines, in Dye Works, Cloth Rooms, at the Fulling Mill, Shears, Calendars, Gigs, Drying Machines, etc., or any of the different finishing processes in textile mills.

Manufactured by the

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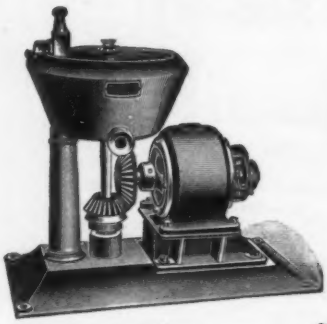

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MOTOR WOUND FOR ANY VOLTAGE.

Separates oil from bolts, nuts, and scraps of all kind—oil that would otherwise be wasted, and makes it as good as it ever was, for further use. **Send for Catalogue.**

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We build the very best types of

MODERN, HIGH SPEED, GEARED MACHINES,

and which are adapted for working Manila, Sisal, Jute, Hemp and Cotton Fibre.

Agents SAMUEL LAWSON'S SONS' Jute and Flax Machinery.

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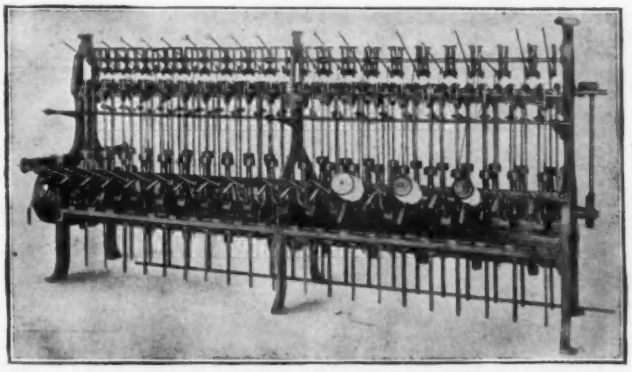
Used by most all manufacturers of heavy goods in the United States and Europe.



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Builders of Improved

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for WOOLENS, WORSTEDS, FELTS, etc.

Built Upright or Horizontal with Low Down Feed

Ventilating Fans a Specialty

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HARD WEAVING

We solicit a trial of our cabled twine harnesses on work which is hard to weave and which is known to be hard on harnesses. We want to show you that we can make hard work easy—that we can furnish harnesses which not only weave well but wear well.

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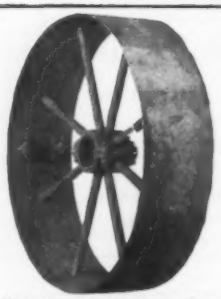

Eight-Arm construction used on Pulleys from 30 in. to 60 in. inclusive, 4 in. to 12 in. width of face inclusive.

The "Latshaw" All Steel Split Pulley

is not a combination of Steel and Cast Iron. Spokes fastened without the use of rivets at hub and rim. The steel rim is a better surface than wood or iron. They are the easiest pulley to put on and the easiest to change from one shaft to another, and are the most economical and strongest Split Pulley made. They run true, they grip the shaft. Bushings to fit all shaft sizes. Spokes do not collect dirt. Especially adapted for textile mills.

"Last but not least, prices are satisfactory." *Ask your dealer.*

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Acid proof and Waterproof floors for Dye Houses. Concrete Construction of Mill Buildings and Chimneys.

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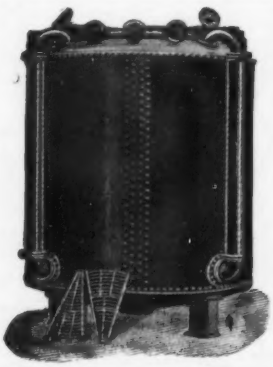

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BOILERS, TANKS, PLATE WORK

Special Attention Given to Repairs

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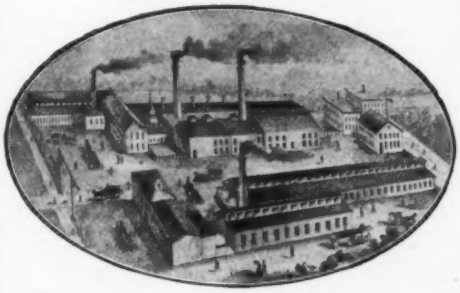
Germantown Dye and Bleach Works



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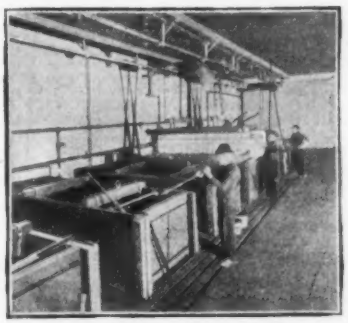

Being successfully operated by some of the largest manufacturers in the country.

The saving of labor will more than pay for a machine in a few months.

Capacity; 2,000 lbs. a day per man.

Machine can be seen in operation at any time at my plant where I have 13 in operation all the time.

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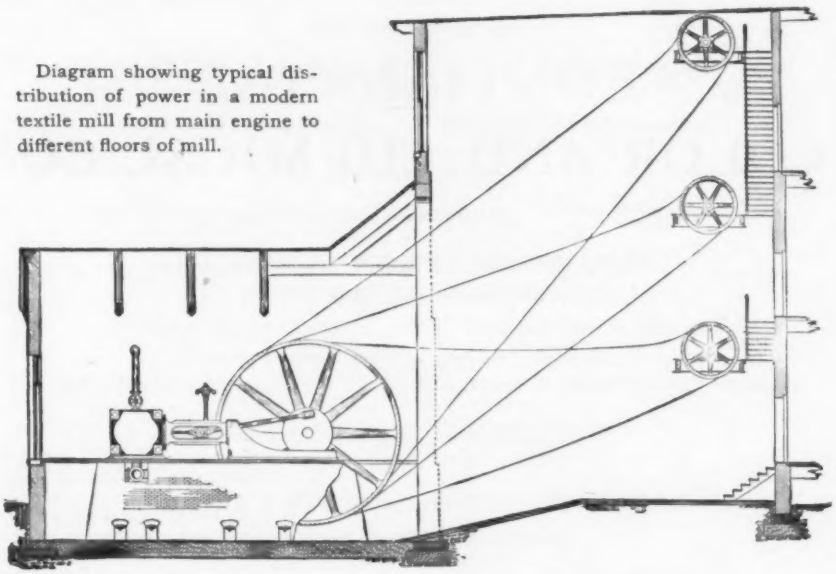

Diagram showing typical distribution of power in a modern textile mill from main engine to different floors of mill.

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In the modern well-balanced textile mill there is no other known means for the transmission of power that compares with "American" Transmission Rope in cheapness, economy and efficiency. The following reasons explain this emphatic general statement:—

The distance through which power may be transmitted is practically unlimited; in economy, both of first cost and maintenance, rope drives far surpass belting and electrical distribution; rope is more economical of space for the same horsepower; rope drives are absolutely noiseless and do not create electrical disturbances; there is no loss of speed and power through slipping, far less liability to failure and costly delay, and finally, rope is adapted to driving in any direction between shafts at any angle or relative position, indoors or out-of-doors.

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Published Monthly by

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FRANK L. NAGLE, President. **HENRY G. LORD, Treasurer.**

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PART I. Contains a complete directory of all the textile establishments in the United States and Canada. It tells what goods are made, the number of sets of cards, spindles, looms, whether and what they dye or finish, steam or water power, who the selling agents are, the names of the officers, superintendent and buyer.

There are 22 textile maps; gives population of town and railroad connections.

PART II. Is the Yarn Trade Index, containing classified lists of yarn spinners, arranged according to kind of yarn, size and number spun, etc. All the mills with worsted machinery are included in this section.

PART III. Contains Classified List of mills doing order and commission work, also dyeing, finishing, bleaching and printing establishments, classified according to the kind of work done, and so far as possible giving width of goods handled; also shoddy, extract and flock manufacturers and wool scouring establishments.

PART IV. Manufacturer's Selling Agents and Dry Goods Commission Merchants, giving the name and address of concern, character of goods handled, different departments, with managers, list of manufacturing clothiers, and suit and cloak manufacturers, giving specialties and buyers' names. A list of city offices of textile mills is given.

PART V. Dealers and Brokers in raw materials and stock, including wool and shoddy dealers and brokers, cotton dealers and brokers, factors and buyers and wholesale rag dealers making a speciality of textile interests.

PART VI. Buyers Index of Textile Machinery and Supplies, and statistics showing textile machinery in the United States, giving spindles, looms, knitting machines, etc.

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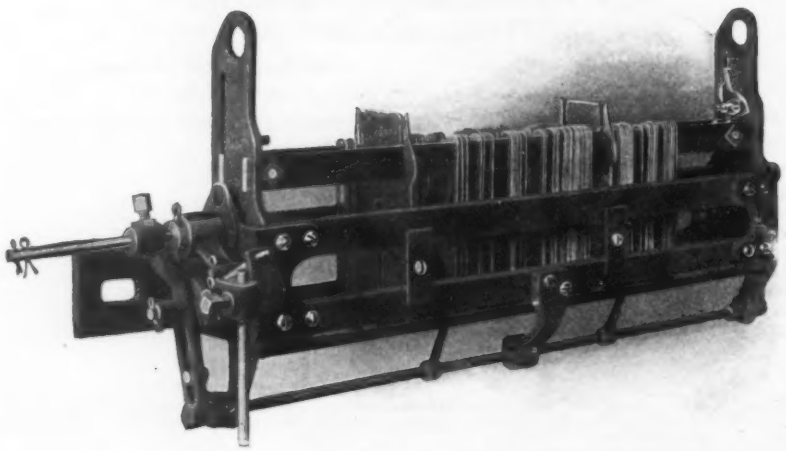
is published early each year by LORD & NAGLE CO. It is a complete directory of all the establishments in the United States and Canada manufacturing knit goods. It gives the location of the mill, the capital stock, names of the officers, superintendant and buyer, class of goods made, the machinery, including number of knittng machines and sewing machines, selling agents, if any, and in most cases the class of yarn bought. It also contains a list of commission houses making a specialty of knit goods, and jobbers and large retailers having knit goods department, in most cases giving the names of manager in charge of knit goods. The book is small so that it may be carried in the pocket. Price is $1.00.

Warp Stop Motions



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Correspondence.

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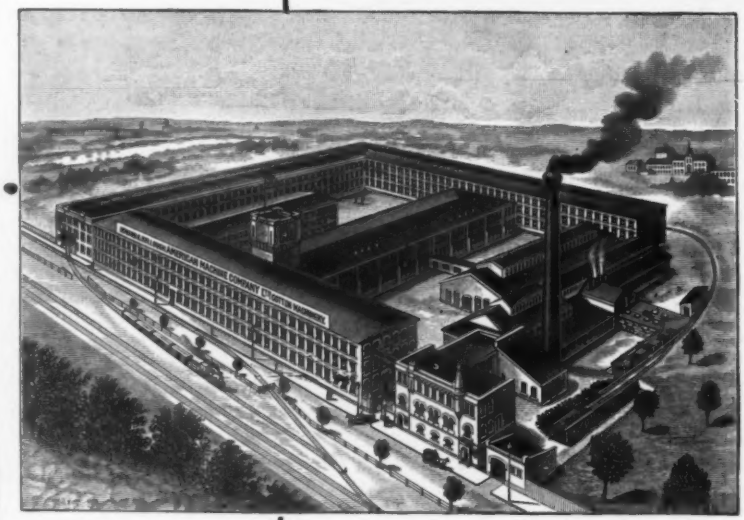

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COMBINING

The Textile World and Textile Record.

VOL. 32 (NEW SERIES.) FEBRUARY, 1907 No. 5

Monthly Comment.

Our Foreign Trade in Cotton and Cotton Goods.

For the eleven months ending November our exports of cotton goods were valued at $40,255,815, as compared with $29,397,854 during the corresponding period of 1904, and $51,411,400 for that of 1905. The 1906 total was thus equal to the average for the two preceding years. The value of the cloths exported to China in the 11 months of 1906 showed a loss of $4,641,139, as compared with the average for 1904 and 1905, but this loss was made up by gains in the shipments to other countries, the chief of these being the United Kingdom, Germany, Central America, the West and East Indies.

A significant feature of our foreign trade is the decrease in the cotton cloths exported to Japan, from $516,534 in the 11 months of 1904 and $825,728 in 1905 to $62,982 in 1906. This is due in some measure undoubtedly to the abnormal Japanese requirements during the war, but it is also an indication of the growing industrial independence of Japan.

If we may credit the reports received from various quarters the Japanese are not only developing their cotton industry to supply their domestic needs, but are rapidly getting into shape to compete with other nations in foreign markets, notably that of China. The large supply of cheap labor in Japan and the scarcity of labor, even at high prices, in the United States leave little room for doubt that the Japanese will succeed in this undertaking. A like advantage in the struggle for markets is possessed by Japan over Great Britain and other European countries, but in a somewhat lesser degree.

Under these conditions it would indeed be surprising if Japan did not succeed in capturing a large part of the foreign cotton goods trade now held by other countries. If this takes place Lancashire will be the chief sufferer because 90 per cent. of the cotton goods made in England are exported. The United States, on the other hand, exports only 9 per cent. of the cotton goods made at home. In other words the British home market absorbs only 10 per cent. of the products of British cotton mills, while the American home market absorbs 91 per cent. of the products of American mills.

With our home market protected by the Dingley bill we have little to fear from the competition of cheap labor in Japanese mills. That competition promises to be a serious matter for Lancashire. All of which proves that while a foreign outlet for goods may be a good thing, the lack of it is not without its compensations, and that the best market any country can have is a home market.

Revision of Differences between Cotton Trades at New York.

Criticism of the differences "on and off" allowed by the New York Cotton Exchange forced that exchange to appoint a committee some time ago to revise the rates, which, it was charged, encouraged reckless speculation by making it easy to deliver low grades on contract. How widely the New York rates have differed from general market conditions is illustrated by "low middling," on which the New York Exchange has heretofore allowed 38 points off, and on which the difference in Southern markets has recently varied from 100 to 137 1/2 points off. The report of the New York committee was evidently a compromise between the speculators, who were satisfied to leave the old differences unchanged, and those who believed the Exchange rules should be radically revised. Thus on low middling the committee raised the difference from 38 to 50 points "off," leaving a wide margin between the new rate and that prevailing in the South. The following table gives the old and new differences:

	Old	New	
Fair ..... on	1.30	2.00	on
Strict Middling Fair ..... "	1.13	1.75	"
Middling Fair ..... "	.90	1.50	"
Barely Middling Fair ..... "	.79	1.25	"
Strict Good Middling ..... "	.62	1.00	"
Fully Good Middling ..... "	.53	.88	"
Good Middling ..... "	.40	.76	"
Barely Good Middling ..... "	.33	.57	"
Strict Middling ..... "	.22	.38	"
Middling ..... "	Basis	Basis	
Strict Low Middling ..... off	.14	.14	off
Fully Low Middling ..... "	.26	.32	"
Low Middling ..... "	.38	.50	"
Barely Low Middling ..... "	.55	.70	"
Strict Good Ordinary ..... "	.72	.90	"
Fully Good Ordinary ..... "	.86	1.07	"
Good Ordinary ..... "	1.00	1.25	"
Strict Good Middling Tinged on	.30	.30	on
Good Middling Tinged	Even	Even	
Strict Middling Tinged ..... off	.06	.06	off
Middling Tinged ..... "	.12	.12	"
Strict Low Middling Tinged .. "	.34	.46	"
Low Middling Tinged ..... "	.50	.90	"
Strict Good Ordinary Tinged .. "	.84	1.25	"
Fully Middling Stained ..... "	.42	.42	"
Middling Stained ..... "	.50	.50	"
Barely Middling Stained ..... "	.78	.78	"
Strict Low Middling Stained .. "	1.06	1.50	"
Fully Low Middling Stained .. "	1.28	1.75	"
Low Middling Stained ..... "	1.50	2.00	"

The claim has been made and supported by convincing argument and evidence that the most effective remedy for the evils of speculation is to change the Exchange rules so that the seller will be restricted to a narrower range in making deliveries of cotton. While the changes made in the New York rules are not likely to have any material effect in the reform of present abuses, still they are a step in the right direction.

Why Not Make the Goods at Home?

The rapid increase in the volume of textiles imported into this country prompts the interesting question as to whether these goods could not be advantageously manufactured in American mills. Following is a statement of the imports of textiles by value for the eleven months ending November, 1906:

Cotton Goods:		
Cloths	$10,695,344	
Clothing	2,745,597	
Knit Goods	7,488,357	
Laces	33,547,515	
Thread	2,890,203	
All other	3,956,234	$61,323,250
Fibre Manufactures:		
Burlap	$23,181,325	
Jute bags, etc.	4,238,396	
Cordage	510,031	
Linens	18,204,759	
Handkerchiefs	2,429,888	
Oil cloths	1,871,368	
All other	4,644,659	$55,080,426
Silk Goods:		
Piece goods	$11,985,395	
Laces	5,211,934	
Clothing	3,939,429	
Ribbons	1,661,558	
Spun silk	3,041,935	
Pile fabrics	1,574,504	
All other	3,827,052	$31,241,807
Wool Goods:		
Dress goods	$8,519,568	
Cloths	5,010,068	
Carpets	4,404,429	
Clothing	1,508,361	
Knit goods	237,013	
All other	1,048,747	$20,728,189
Total imports of textiles, 11 mos. ...		$168,373,672

According to the 1905 census of manufactures the annual value of the product of American textile mills of all kinds was $1,215,036,792, or $1,644 per operative. At this rate the manufacture of the $168,373,672 of textiles imported last year would give employment to 111,712 operatives, supporting indirectly a population much larger than this.

Can any considerable portion of this large quantity of imported textile goods be made at home, and if so, why is it not done? In view of the efforts now being made to extend our foreign market, we suggest that these questions regarding the home market might profitably engage the attention of the government at Washington.

Why not study the quality and prices of the goods now being imported and report the facts for the benefit of American mills?

Special Agents Abroad.

At the present time there are several special agents of the United States traveling in foreign countries with the object of investigating foreign markets and reporting their discoveries for the benefit of American exporters. They deserve and will doubtless receive the sympathy of every business man.

Investigating foreign markets for the benefit of American manufacturers. That sounds well, so well in fact that Congress was recently induced to grant an additional appropriation to continue the work of these special agents. But it is difficult to imagine a more hopeless undertaking. The information that would benefit American exporters is jealously guarded by the merchants who possess it. Much of it cannot be imparted to others for it consists of knowledge of men and things gained by years of experience. It is in fact business experience, which, combined with individual hustling, results in business, foreign and domestic. The special agent soon finds that the merchants in foreign countries are not anxious to tell the United Sates Government how they carry on their business. Part of what they know they cannot tell; the rest they will not tell.

The special agent must, however, do something to earn his salary and expenses, and the result is seen in the series of remarkable reports received from them during the last few months. We will give one illustration. The special agent in China gives this explanation of "how cloth is sold" in that country:

Suppose, for example, that a large Chinese wholesale dealer, April 1, 1906, decided to buy 1,000 bales 3-yard standard sheeting for delivery not later than July. He goes to the foreign merchant at Shanghai that he has been accustomed to deal with, or else goes to a merchant's compradore and gets him to introduce him to the merchant. He makes the merchant an offer, and a tentative price is agreed on. All prices, whether by American or English, are here quoted in pounds sterling ($4.86). so a tentative price is agreed on of 10 s. (shilling, 24 1/3 cents) a piece.

The Shanghai merchant cables his New York house, offering this rate for 1,000 bales 3-yard standard sheeting, c. i. f., delivered at Shanghai. All goods practically come part way overland, and the present rate is $12.50 a ton, or 40 cubic feet. An ordinary bale of sheeting will measure 8 cubic feet. As there are twenty 40-yard pieces to a bale, this makes the freight per yard 0.3125 of a cent. The present marine insurance is about 40 cents per $100, or, say, 20 cents to a bale, which is one-fortieth of a cent a yard. The freight and marine insurance, therefore, amount to 0.3375 cent a yard.

HOW THE ORDER IS PLACED.

The export firm in New York on receiving the offer of 10 shillings a piece changes it into American terms and finds it to be 6.075 cents a yard. From this the export firm deducts its commission of 1 per cent. for buying, and then the freight and insurance, which leaves 5.676 cents, or, as cloth is usually quoted in eighths, say 5 5/8 cents a yard. The export firm then calls up a cotton piece goods broker on the 'phone and offers 5 5/8 cents (a yard understood) for 1,000 bales standard 3-yard sheeting, July delivery. The broker goes across the street maybe and calls on a commission house representing several cotton mills on export sheetings and repeats the same offer.

The commission house looks over its lists and sees what mill can probably handle the order and wires them, saying they can probably place 1,000 bales, 3-yard, 48 by 48, sheeting for May shipment at 5 5/8 cents, immediate acceptance. If the mill refuses to take less than 5 7/8 cents, and it cannot be obtained cheaper from other mills, this is wired back through the intermediates to China, and the Chinese dealer notified that the goods cannot be bought for less than 10s. 6d. If the English houses cannot do better, or if he prefers the American goods, he may accept this on condition that the goods be not delayed beyond July 1 arrival. This is agreed to and the bargain closed, and wired back along the line and the mill enters the order. The Chinese dealer gives the merchant an indent or written order for the goods, but makes no advance payment. Acting for him, however, the merchant goes to a bank and arranges for October exchange for $51,000.

Surely the cash in the United States treasury can be put to better use than paying for such commercial sketches as that.

The floor of the Manchester Royal Exchange is the largest room in the world devoted to commercial purposes; its area is 4,405 square yards.

Wages in the German Textile Industry.

The wages paid in the textile mills of Germany are of especial interest at the present time because of the persistent attempts to secure a revision of the Dingley rates that will make it easier to bring the products of German labor into the United States. The Dingley tariff was framed to protect American labor against the low-priced labor of foreign countries. It is well for Americans to keep this in mind and also to keep informed regarding the rate of wages abroad. A recent official report issued by the city of Barmen contains the following tabulated statement of the weekly wages paid to textile operatives in that centre of German industry:

	MALES.		
	$5.50 and below	Above $5.50 to $7.50	Above $7.50
Ribbon weavers	31.6%	60.9%	7.5%
Upholstery weavers	4.4	46.7	48.9
Warpers	81.7	18.3	....
Braiders	43.5	51.8	4.7
Dyers	37.2	59.1	3.7
Turkey Red dyers	28.1	71.9	....
Finishers	55.9	38.2	5.9
Helpers	56.5	39.5	4.0
Shippers	52.1	45.8	2.1
Store House help	49.0	45.3	5.7

	FEMALES.		
	$3.50 and below	Above $3.50 to $5.00	Above $5.00
Ribbon weavers	19.6%	71.4%	9.0%
Lining weavers	15.0	78.7	6.3
Warpers	10.7	83.6	5.7
Spoolers	68.5	31.3	.2
Winders	42.4	65.8	1.8

Textile Machinery in Japan.

A recent report from Japan, by W. A. Graham Clark, one of the special government agents now investigating foreign markets, contains interesting details regarding the Japanese market for textile machinery. Mr. Clark thinks there are good opportunities for American machine builders:

At present Japan is a better field for the sale of machinery needed to make finished products than for the manufactured products themselves. In no line of business is this truer than in cotton manufacturing. Japan is straining every nerve to change from a consuming to a producing nation, and a great amount of money will be put into textile machinery in the next few years. The tendency of all the mills is to add looms and make cloth for the export trade. The great market for cloth of the kind that can readily be made by Japan in Manchuria and Korea has stimulated the weave mills, while the yarn business has to stand severe competition in China with Indian yarn, and at present the yarn market is dull. Many Japanese yarn mills are considering the question of changing to weave mills, and several have recently done so.

There is at present a fine opportunity for our textile machine manufacturers to gain a foothold in Japan. The textile machinery market is dominated by the English to an even larger degree than the textile market. Reports from England are that textile machinery manufacturers are overwhelmed with orders and cannot give quick delivery. Spinning machinery is being turned out at Oldham and elsewhere in vast quantities, and shops are running overtime. The loom makers in Blackburn and Burnley are turning out more looms per month than ever before and are much behind with orders. Makers of reels, slashers, engines and boilers, etc., are running behind on delivery. Much of this unprecedented activity in textile machinery factories in England is produced by the foreign demand, of which a good portion, like that from Japan, rightfully belongs on account of proximity to the United States.

The report refers to the well-known predominance of English Textile machinery.

That the English control the market for textile machinery is due entirely to the indifference of our manufacturers. The English, besides having their agencies, send experts out continually, and do everything possible to facilitate buying, our manufacturers paying little attention to the market and even not giving quotations when desired. A local American firm that handles machinery, a little while back, noting the amount of money going to England for textile machinery, wished to see if some of it could not be diverted to America. They accordingly wrote to one of the largest companies manufacturing looms in the United States of the big market, and asked for quotations to see if we could not profitably compete. The answer came back in due time that the firm appreciated his inquiry, but did not care to make any quotations unless they knew the name of the particular mill the machinery would be ordered for. Contrast this with what would have been the result if the circumstances had been reversed and application had been made to England.

The textile machinery imports are increasing rapidly, as shown by the following table:

	1903.	1904.	1905.	First six months of 1906.
Cotton-printing mach'y	$19,629	$17,980	$11,187	$19,403
Cotton-spinning mach'y	267,501	316,942	614,117	556,177
Cotton-weaving mach'y	39,670	77,418	193,282	66,829
	326,800	412,340	818,586	642,409

Of the $818,586 worth for 1905 there was shipped from the United States only $14,613 of cotton-spinning and $22,512 of cotton-weaving machinery.

After giving details regarding several large Japanese weaving mills projected or in course of construction, the report gives an account of a comparative test of English, American and Japanese looms.

For the last year the Kanegafuchi Spinning Company, which is the largest in Japan and operates 218,080 spindles, has been conducting at its head mill in Kobe an experiment to determine the best loom. They installed 100 looms, of which 10 were plain looms from America; 30 plain looms from Platt Brothers (Limited), Oldham, England; 12 Platt looms with warp stop motions; 30 plain looms from the Toyoda Shokwai Company at Nagoya, Japan; and 18 Toyoda looms with warp stop motions.

The trial resulted in favor of the English looms without stop motions and looms have been ordered from England to replace the Japanese looms.

The 100 looms have been running on 44 by 44, 36 inches, 3 1/3-yard shirting, making cuts 40 yards long, weighing 13 pounds. The yarn was a mixture of Indian, Chinese, and American. In blending three cottons of differing length of staple, different color, different texture and feel, and different spinning qualities, great skill is shown by the Japanese, but it is impossible for the resulting yarn to be as strong as yarn made from pure American cotton; and if too much twist is put in it kinks too badly. For this reason warp stop motions cause too much stoppage of the loom for coarse plain cloth, and are very much opposed by the operatives.

The American looms were given a black eye at the start by coming out in a broken-up condition due to bad packing and to rough handling, while the English looms arrived ready for work. While admitting that the American loom with American operative is all right, the main argument made by the Japanese against its use is that it is badly designed for this market and that, as compared with the heavier English make, the breakage is excessive. This is due to the rough handling that is given the looms by Japanese operatives and loom fixers. The Japanese loom is inferior in weaving qualities and could not stand the usage.

Keeping Them Where They Belong.

At the annual dinner of the alumni and former students of the Massachusetts Institute of Technology at the Hotel Brunswick last month Lieut. Gov. Eben S. Draper made a speech in which he is reported as referring to textile and trade schools as follows:

> There is no other institution that gives to its graduates such a working capital to start with as the Massachusetts Institute of Technology. It has a place of its own in the sphere of education, turning out men that not only have a complete education, but have a complete knowledge of scientific work.
>
> The trade and textile schools that are springing up all over the state are going out of their province when they attempt to do the work that the institute is doing, and I will make great effort to keep them where they belong. They are schools to teach trades and certain parts of the industrial work. They are attempting to take up the work in a broad way, with the result of giving only a smattering of knowledge.

This statement is of especial interest, coming as it does from one who spoke not only as a former student in the Institute of Technology, but as the official representative of Massachusetts and as a man of affairs, with large interests in textile manufacturing and allied industries. That his criticism of the expansion of textile and trade schools is well founded admits of no denial. In a greater or less degree these schools have missed the objects for which they were created, by reason of the controlling tendency among them to dabble in the so-called higher branches of engineering, which the lieutenant governor seems to think are the exclusive province of such institutions as the Massachusetts Institute of Technology. It is especially encouraging to have the fault recognized by a representative of the Institute of Technology, because of the responsibility of that Institute for the very tendency it now condemns.

To those of us who have studied the work of the textile schools free from the handicap of official connection with them, who have been able to learn of the ins and outs of the more prominent Massachusetts textile schools from the vantage ground of friendly conversation with textile students and instructors, no fact has stood out more prominently than the existence of what, for lack of a better name, we will call the "Tech" influence in shaping the policy of these schools.

We are all proud of the Massachusetts Institute of Technology. It is so broad that it belongs not alone to Massachusetts, but to the world. Seated at the Hub of the Universe, it is not national; it is international. We rejoice in the great work it is doing.

But even the Massachusetts Institute of Technology has its limitations, and for the highest efficiency in training the mind and the body it was found necessary to divide the work, giving an important part of it to textile and trade schools. By keeping each institution where it belongs the student who knows what he wants will also know where he can get it. Moreover, under such an arrangement there will be no occasion for one

class of schools to be dominated by the influence of another class. Each will have its special work to do and all will be subject to that grand and consoling fact that there can be no monopoly of the highways to truth, a fact illustrated by the greatest philosopher of the nineteenth century, who, educated privately persisted to the last in his refusal of degrees from even the highest institutions of learning.

The New Association of Woolen and Worsted Manufacturers.

Much has been printed concerning an organization recently formed by a number of prominent woolen and worsted manufacturers, but very little definite information has been given out. The president of the association is Joseph E. Fletcher, of the Coronet Worsted Co., the executive committee being made up as follows:

John P. Wood, of Wm. Wood & Co., Philadelphia, Pa.; Frederick S. Clark, Talbot Mills, North Billerica, Mass., H. B. Beebe, Beebe-Webber Co., Holyoke, Mass., H. M. Steel, of Edward T. Steel & Co., Bristol, Pa.; Louis B. Goodall, of the Goodall Worsted Co., Sanford, Me.

In addition to the president and members of the executive committee, as above given, the following firms are included in the membership:

Allenton Woolen Company, Amos Abbott Company, Beebe-Webber Company, Coronet Worsted Company, Central Yarn Company, Caledonia Mills Company, Crawford Woolen Company, Crown Mills, Dunn Worsted Mills, Earnscliffe Worsted Mills, Earnsdale Worsted Mills, Greenville Woolen Mills, Goodall Worsted Company, Lippitt Woolen Company, Mystic Manufacturing Company, Plainfield Woolen Company, Pontoosuc Woolen Manufacturing Company, Pawcatuck Woolen Mills, Paramount Worsted Mills, Chas. Porter & Son, Passaic Woolen Company, Princeton Worsted Mills, E. T. Steel & Co., Singleton Worsted Company, H. F. Scatchard Manufacturing Company, Saxonville Mills, Southwark Mills Company, Talbot Mills, Waterhouse Worsted Mills, Wm. Wood & Co.

No official statement of the objects of this organization has been issued, but it is well understood that it has been formed for mutual protection and for the purpose of correcting many of the abuses which have long prevailed in the men's wear woolen and worsted trade. The organizers disclaim any intention of assuming an aggressively antagonistic attitude toward the buyers, the object being only to establish the trade on a sound basis, fair to both buyer and seller.

Owing to the large amount of machinery under its control the American Woolen Company is able single handed to exert a powerful influence in the shaping of trade customs. Now that the independent manufacturers are being organized, the two together will unquestionably be in a better position to reform trade abuses than ever before.

The Charges Against the New York Cotton Exchange.

Last month we published the charges brought against the New York Cotton Exchange by President Jordan, of the Southern Cotton Association, and Congressman Livingston of Georgia, together with a brief comment on them by President Hubbard of the New York Exchange. Since then Mr. Hubbard has made further reply which is reported as follows:

Mr. Jordan charges that the New York Cotton Exchange revision committee changed differences on spot cotton grades to attract low grades of unspinnable cotton to this market to be used in tendering on contracts, rigging the market, washing sales, and forcing the transactions of the exchange to a purely speculative gambling institution.

The situation of certain parties in the South is that they committed themselves (when the crop outlook was promising as to quality) to deliver high grade cotton, but a protracted period of wet weather came along, and this resulted in an unuusually poor average grade.

It goes without saying that while cotton mills could get choice cotton, they competed with the Southern factories. After the pick of the crop had been thus absorbed, the lower grades were levied upon, and the demand continuing, buyers were driven to the still lower grades, with the result of high prices.

The arbitrary difference fixed by the Revision Committee once a year, and to endure through the life of the contract, is law unto itself and quite another thing.

However, the New York contract is the result of years of study, based on experience. At the moment the difficulties of the system advocated in opposition to the present one are shown by the corner of each month in Liverpool as it approaches the delivery period. If the idea is to prevent deliveries rather than to facilitate a market for all grades of cotton, good or poor, then the other system may be the right one.

It is obviously untrue that the Revision Committee here reduced the high grades and advanced the low grades; the record shows that it did exactly the opposite, and the only question with the trade here is as to whether it carried the change far enough.

While this statement falls far short of meeting the Jordan-Livingston charges, it indicates that there is something to be said in defense of the New York Exchange, and incidentally emphasizes the need of a general investigation of the methods of marketing the cotton crop.

The Canadian and Dingley Tariffs.

Philadelphia, Pa., Jan. 30, 1907.

Editor Textile World Record:

In the Textile World Record for January there is the following statement on page 71:

"The wide gulf that separates the new Canadian tariff from the protection that American labor needs against the low-priced labor of Europe becomes evident when we consider that the duty collected on wool and worsted dress goods imported into the United States for the year ending June, 1905, averaged 102 per cent., and that the actual protection under the Dingley law is not fully represented by that rate, because the specific duties are practically prohibitory on low grade goods."

This needs explanation, as a comparison with Canadian duties, for it has figured in it the duty on wool. Duties on goods are 30, 40 and 50 per cent., with the very finest paying 55 per cent., plus the specific equivalent of the duty on wool.

C. H. Harding.

Mr. Harding's point is well taken. Reference to it was omitted from our January comment, the object of which was not to analyze the Dingley tariff, but to draw a general comparison between the tariff policies of the two countries.

The ad valorem duties of 30 to 55 per cent. represent nominally the protection to the woolen manufacturer, the additional specific duty, which brings the total to 102 per cent., being what is called compensatory duties for the duty on wool. In practice, however, it is impossible to maintain this distinction. For example, the goods classed as woolens and worsteds on which the duty amounted to 102 per cent. contained a considerable quantity of cotton, which is not subject to an import tax.

The chief reason, however, why the distinction between protective and compensating duties cannot be maintained in practice is that the woolen industry comprises all processes from sheep raising to clothing manufacturing. In the broad spirit of American protection it is as illogical to draw tariff distinctions between wool grower and spinner as between spinner and weaver, or between weaver and clothier. They all stand or fall together.

The rate collected on the comparatively small amount of goods that trickle over the Dingley tariff dam does not represent a tax on the American consumer of woolen goods. Much of it is paid by the foreigner. The remainder is largely paid by the people who think goods are better when they are imported. As long as we have at home the power of production under competition between domestic manufacturers, we have no occasion for worrying about the duty imposed on imported goods. In the woolen and worsted industry we have that power of production under home competition. The cost per pound or per yard may be higher here. Such increase, however, is but a small fraction of the Dingley duty. Our greater purchasing power, because of protection, more than compensates for the increase in the cost. As a result the American people are much better clothed with wool than are the foreigners.

National Association of Cotton Manufacturers.

The annual meeting of the National Association of Cotton Manufacturers, formerly the New England Cotton Manufacturers' Association, will be held in Boston on Wednesday and Thursday, the 24th and 25th of April. The program has not yet been fully arranged, but promises to be of special interest.

Wool Manufacturers' Annual Meeting.

The forty-second annual meeting of the National Association of Wool Manufacturers was held at the Hotel Somerset, Boston, in the afternoon and evening of Feb. 6. The business meeting, which preceded the reception and banquet, was well attended.

The report of the secretary showed that no great emergencies have arisen in this year of peace and industrial prosperity. The tariff situation with Germany was touched upon and the appointment of a commission for the conference with the German authorities. It will be remembered that one of the members of this commission is S. N. D. North, a former secretary of the association, and now Director of the Census. Recommendations were made for a fair yet unbiased operation of the administrative customs act. Reference was made to the rapid growth of wool manufacturing in the United States during the five years from 1900 to 1905. The capital invested has increased sixty million dollars; the average number of wage earners, twenty thousand; wages paid, thirteen million dollars; the cost of materials, sixty million dollars; the value of the product ninety-four million dollars, and Secretary McPherson caustically remarks, "and yet writers of the free-trade press delight in referring to it as a decaying industry."

A gracious tribute was paid to the memory of the late John L. Hayes, who was for many years secretary of the association, in reply to an attack on him in a current magazine article. Mr. McPherson protested against the imputation that Mr. Hayes or the association had in any of their efforts to protect the growth and expansion of the wool industry ever resorted to any methods that were not entirely above suspicion or would not bear the closest scrutiny of unbiased investigation. "Not a dollar," said he, "has ever been used to influence the vote of a member of Congress, or to secure the support of any individual or of any legislation."

The undervaluation of imported woolen goods and "cancellation evils" were touched upon. The latter is not a new topic for discussion before the executive committee of this association. The consideration of the subject half a dozen years ago was referred to; at that time it was felt that without the support of practically the entire industry for the plan, which must mean adherence in dull times as well as in times of prosperity, its success might be doubtful. It is, however, recognized that the principles of the Association are the defence of the interests of the wool manufacturers, and its officers are always ready to give particulars of work along this line. The secretary's report was referred to the executive committee to determine what action, if any, should be taken.

The only resolutions adopted were those of sorrow and tribute to the memory of the late Benjamin Phipps, "who for more than twenty years held the office of treasurer of the association and passed away on the first of May at the ripe age of eighty-two years. Useful and valuable to the association and beloved by its members, his is a loss that will be widely and deeply felt."

The election of officers resulted as follows, the only change being that the office of treasurer was combined with that of secretary:

President—William Whitman, Boston, Mass. Vice-Presidents—Charles H. Harding, Philadelphia, Pa.; William M. Wood, Boston, Mass.; Frederic S. Clark, No. Billerica, Mass. Secretary and Treasurer—John Bruce McPherson, Boston, Mass. Executive Committee—John N. Carpender, New Brunswick, N. J.; James Dobson, Philadelphia, Pa.; Joseph Metcalf, Holyoke, Mass.; Abiel J. Abbot, Graniteville, Mass.; John P. Wood, Philadelphia, Pa.; William C. Greene, Peace Dale, R. I.; Charles A. Stott, Lowell, Mass.; Thomas Oakes, Bloomfield, N. J.; William Bloodgood, New York, N. Y.; John Hopewell, Boston, Mass.; George E. Kunhardt, Lawrence, Mass.; A. Park Hammond, Rockville, Conn.; J. R. MacColl, Pawtucket, R. I.; Francis T. Maxwell, Rockville, Conn.; J. F. Maynard, Utica, N. Y.

Among the new members elected were the H. W. Butterworth & Sons Co., of Philadelphia, and the Musketaquid Worsted Co., of Lowell.

The business meeting was followed by a reception and banquet at which about one hundred and fifty were present—a most representative gathering of the wool and worsted manufacturing interests of the East-

ern section of the country. Members were present from New York, New Jersey and Pennsylvania, as well as from New England, with some representatives from the more distant states.

At the speaker's table Congressman William S. Bennett of New York sat at the right of President Whitman, and Prof. Paul Hanus of the Massachusetts Industrial Educational Commission at his left. Others at this table were President J. R. MacColl of the National Association of Cotton Manufacturers, President Carroll D. Wright of Clark University, Wm. C. Greene of Peace Dale, R. I., J. F. Maynard of Utica, N. Y., C. J. H. Woodbury, secretary of the National Cotton Manufacturers' Association, Justin A. Ware, John Hopewell, Chas. H. Hutchins, F. C. Dumaine, Francis Thurwell, Albert Clarke, C. W. Leonard, Louis Goodall, and Secretary Walcott of the Merchants' Association.

The president extended greetings and congratulation on the prosperous year which has just closed and reaffirmed the principles for which the association stands. He spoke in part as follows:

We must see to it that the labor of our own industry receives as fair a share of the general wage as those in other industries, many of which, though not directly protected by tariff laws, are, from their very nature, monopolies so far as foreign competition is concerned. We hear continually of "protected" industries, yet there are many industries in this country which are far more free from any foreign competition than the industries of this so-called "protected" class. We should continue to oppose, as we have opposed, all commerical or so-called reciprocity treaties that make special concessions to favored countries. We should stand steadfastly against any commercial union with Canada, unless it is accompanied by political union. We should also strenuously oppose any dual tariff except such as is defined in the McKinley and Dingley tariffs.

Recently the Governer of Massachusetts, has undertaken to hasten tariff action and to create a conviction that this is the wish of business men and the voice of Massachusetts, by circulating privately among the members of our Legislature a petition requesting the President and the Congress to hasten tariff action. He has done so in a way to avoid any investigation or discussion.

We, who are responsible for the employment of thousands of people and for the continued prosperity of many communities, should rise up in our wrath and openly repudiate the Governor's assumed authority and oppose his tariff policy. What we desire is not agitation, but peace. It is the greatest need of business generally. The business interests of today ought not to be imperiled for conjectural and illusive political advantages. We ought not to allow our industrial system to be made a political plaything.

If, in the course of events, tariff revision is needed, we should favor it. We have already said that "we favor tariff revision when it shall be required to promote the prosperity of the American people." If tariff changes are to come, however, they should come in the natural order of things, and as a result of a true public need.

All efforts on the part of political leaders to force changes into our tariff in advance of a true demand on the part of the people should be condemned. All attempts to create the idea that such a demand exists when it does not should receive our reprimand.

I feel confident, however, that the unusual procedure to which I have referred will prove barren of results, and that the great industries of this country may safely plan their operations for the next year at least without fear of any serious disturbance.

Following President Whitman, Prof. Hanus made an interesting address on the subject of industrial education. While admitting the improvement that has taken place in educational methods, yet much was to be desired in training young men and women to make their living in occupations that are in urgent need of workers. He believed that the tendency of the present educational methods leads the graduates away from rather than toward the industrial occupations. The present system is well enough as far as it goes, but it does not go far enough. Training schools should be made a part of the educational system of all manufacturing states and these schools should be so specialized and developed as really to equip their graduates for the serious work of life.

Congressman Bennett spoke on the immigration question. He believes thoroughly in the admission to this country of all able-bodied persons who are sound mentally, physically, and morally without regard to any intellectual test. This country is in need of all the workers it can obtain and its powers of assimilation are so great that it is capable of turning into good American citizens the immigrants of all nationalities.

Spain has 2,614,500 cotton spindles and 68,300 cotton looms; 662,000 woolen spindles and 8,000 looms.

At the beginning of 1906 there were 55,000 power looms engaged in silk weaving in the United States.

Two Years of the Southern Cotton Association.

It was a great week for Birmingham, Alabama, when last month the Southern Cotton Association held its convention at that great centre of Southern industry. Great not only for Birmingham, but for the entire cotton belt and the cotton trade of the world, because Harvie Jordan was there with a proclamation announced with all the finalty of a verdict of history. He began with an account of the birth of the Southern Cotton Association at a time when cotton was selling at six cents a pound and ruin faced the South. Let him tell about it himself:

> At the time of its birth the price of the great staple crop of the South had been depressed to six cents per pound through the manipulation of speculative influences, and financial wreck and ruin faced the agricultural, industrial and financial institutions of the South.

His story recalls the birth of the goddess Minerva who sprang forth fully armed from the brow of Jove. The parallel appears even closer when it is recalled that the Southern Cotton Association was brought into being by a speech from the lips and brain of Jordan, according to the following admission wrung from him by the Lancashire cotton delegates last spring:

> From the report of the Lancashire Cotton Investigating Commission: "Mr. Jordan informed us that the Southern Cotton Association was the outcome of an address given by him at a Conference of Planters, Manufacturers, Bankers and Business Men held at New Orleans early in January last year (1905)."

The father of the Association then tells us how his offspring at once saved the South from ruin, and won "the most marvelous victory ever recorded in the annals of history":

> That a great financial catastrophe was averted and the price of cotton forced to ten cents per pound in five short months in the face of the largest crop ever grown in the South was due solely to that effective co-operation and sentiment which banded together the best manhood of the South. The success of that fierce struggle, which continued unabated through the spring and summer of 1905, between Southern patriots on the one side and the organized brain and capital of the world on the other, resulted in the most marvelous victory ever recorded in the annals of history.

As the Jordan speech progresses the resemblance between his Association and Minerva grows stronger. We learn from ancient tradition "that all that goes on among men, all that constitutes the development of human destiny is under her care. She is the patroness of arts and trades and was invoked by poets, painters, teachers, physicians, and all kinds of craftsmen. She guides heroes in war, and every wise idea, every bold act, and every useful design owes something to the high aspiration of this virgin goddess." As we read the history of this two-year old prodigy as recounted at Birmingham, Minerva and the Southern Cotton Association blend into one:

> Your association was the leading factor in advancing prices ten to twenty dollars per bale on the five million bales of cotton sold during the spring and summer of 1905, that amount representing the unsold portion of the great crop of 1904 at the time the association was organized. This astounding advance in prices, under such remarkable circumstances and against the combined energies of buyers, spinners and speculators, netted the spot holders in the South fully seventy-five million dollars more than they would have received under their former method of selling without regard to co-operation and resistance of depressed markets.

Victories followed on each other's heels:

> It is now a matter of history that, through the loyalty and co-operation of the farmers and business interests generally of the South, with the objects and purposes of this great movement, a second complete victory was won for the cotton growers. Recognizing that the crop of 1906 would materially exceed in production the crop of 1905, your executive committee, guided by conservatism and sound business judgment, reduced the minimum price again to ten cents per pound, basis middling, for the present crop, and the wisdom of their action has been expressed in another victory of unusual magnitude. So that up to this good hour every minimum price fixed by the association since its organization, and in the face of the three largest crops ever produced in the South, has been completely victorious.

The Birmingham historian next reduces his (the Association's) work to the basis of dollars and cents, with equally astonishing results:

> Not only is this true, but each succeeding crop has been sold in the aggregate for more money than its predecessor. The big crop of 1904 sold in the aggregate for $638,000,000; that of 1905 for $650,000,000, and the crop of 1906 will pass into the markets of the country at an aggregate value of $660,000,000. The grand total of three crops aggregated the enormous amount of $1,950,000,000, not including the value of the seed. It would have required the entire output of all the gold mines of

the world for eighteen months to pay for any one of the three crops of cotton stated above, or it would have required $100,000,000 more than the capital stock of all the national banks in the United States to have purchased any one of these three crops.

And what has all this cost?

It cannot be denied that the farmers of the South have made a net saving of at least $250,000,000 in the marketing of these three crops, through the effective aid of this association and allied organizations. When it is borne in mind that the total subscriptions paid, by farmers, firms and people of all avocations in the South to the support of the county and state divisions and the national organization of the association, does not exceed a total of $50,000 for the two years of its existence, it will give you some idea of the tremendous results which have been achieved through an infinitesimal investment.

A profit of $249,950,000 in two years on an investment of $50,000 in the Southern Cotton Association. Our wonder reaches its culmination, however, when the achievements are recounted in which this Association was the pioneer and sole factor. It started the agitation in favor of storage warehouses for cotton:

The Southern Cotton Association first began the active agitation for the building of first-class cotton warehouses all over the cotton belt, thereby providing a swift and permanent method of securing good and safe storage for cotton, cheap insurance and a satisfactory method of financing the crop so as to inaugurate a slow movement of the staple on the markets of the country.

It reduced the cotton acreage:

It is the only organization which ever secured a practical reduction in the cotton acreage when a reduction in the acreage became imperative.

It is the only organization that ever proved wrong-doing in the Bureau of Cotton Statistics, but whether this indicates the innocence of the Washington statisticians, or the detective skill of that Sherlock Holmes of the cotton trade, the Birmingham speech does not reveal:

It is the only organization which preferred charges against the wrong doings of certain officials in the bureau of cotton statistics at Washington, and successfully proved them.

The Southern Cotton Association is an amendment to the law of supply and demand:

It was the first and only association of cotton growers which has been able to name and maintain its minimum price on cotton three years in succession, against the organized brain and capital of the world.

It is an educational institution, teaching the farmer, since January, 1905, to think for himself:

Through the propaganda of this association, scattered broadcast throughout this beautiful land of Dixie, the Southern farmer is being taught to read and think for himself, to diversify his farming interests and make his necessary food supply crops at home; to break up the iniquitous credit system, which has so long been one of the unfortunate legacies of the civil war; to co-operate among themselves and invite the aid of all legitimate Southern interests in the fight to maintain the price of American cotton at fair and profitable figures.

The Birmingham speech shakes some of our strongest convictions. Until that address was delivered we had taken pride in our part in the events leading up to the first International Cotton Conference at Washington last May, as revealed by the following record.

1. From the address of President MacColl of the New England Cotton Manufacturers' Association at Atlantic City, N. J., September 20, 1905:

The International Federation of Cotton Spinners and Manufacturers is assuming an important place in the cotton world. Two congresses have been held, the first in Switzerland, in May, 1904, and the second in England, in June of this year. One of our countrymen was present at the last congress, and at this meeting will present a report of its proceedings.

2. Extract from Atlantic City report of the American representative at the Manchester Cotton Congress:

My visit to Manchester led me to believe that the cotton manufacturers of Europe are desirous of co-operating with the cotton growers and cotton manufacturers of America, and that they would be glad to send representatives to this country to investigate on the spot certain questions whose solution is for the benefit of all. They are restrained from taking this step by the fear that such a visit in the absence of a formal invitation from the manufacturers and growers of America would be taken as an affront, as an unwarrantable intrusion into their neighbor's affairs. There are, however, many conditions in the United States which they, as buyers of 8,000,000 bales of American cotton every year, have a right to investigate on the spot and discuss with authority. This field for investigation and discussion could be greatly extended with benefit to all and without arousing any conflicting or divergent interests, if the cotton growers and manufacturers of the United States would meet foreign manufacturers half way in their evident desire for a friendly international conference.

3. Resolution adopted immediately after the reading of the Atlantic City report:

Resolved, That the Board of Government be authorized to invite delegates from the International Federation of Master Cotton Spinners' and Manufacturers' Associations to attend our 80th Convention, to be held in Boston in April, 1906, and also to confer with the Southern Cotton Association and other manufacturing associations regarding the advisability of holding about the same time a joint conference of representatives of the manufacturing and cotton growing interests of America and Europe.

4. First International Cotton Conference held at Washington, May 1, 1906.

According to Harvie Jordan, however, that is the record of a dream, and the entire credit for bringing the conference to pass belongs to him (his Association):

It is the only association of cotton growers which brought about a conference between domestic and foreign spinners and the producers of American cotton.

Ordinarily we should question that dictum, but it seems useless to try to stem the flood of the Jordan eloquence in which "Claim every time" is the keynote.

The work accomplished in two years by the Southern Association, as chronicled at Birmingham by its creator and manager, is enough to satisfy most men. Not so with Mr. Jordan, who thus gives expression to his aspirations:

The highest ambition of the Southern Cotton Association is to aid in securing prosperity to the rank and file of Southern farmers; to see them, the producers of the natural wealth of our country, happy and independent; to see their children enjoying all the advantages of a first-class education and training, which will properly fit them for the avocations they expect to pursue in after years; to see beautiful rural homes, filled with many of the luxuries of modern life; splendid public roads, and withal, a high type of educated, prosperous husbandry, such as should be the portion of every member of the South's Anglo-Saxon race.

And finally he sums up the achievements of the last two years and the promise for eternity in this thrilling sentence:

The success of the South in that memorable campaign (of the Southern Cotton Association), which commanded the respect and admiration of all nations, also placed the consuming world upon notice that from that time onward through all future years to come, the growers of American cotton would demand fair and profitable prices in the sale of the leading product of their labor.

There has been placed in the sky a bow of promise that the earth shall nevermore be destroyed by a flood and we have the assurance that seed time and harvest shall not fail. To these are now added the guarantee of Harvie Jordan and his Southern Cotton Association that the Southern planter shall be able to sell his cotton at a profit forever.

Seasonable Fabrics.

MEN'S WEAR WOOLENS.

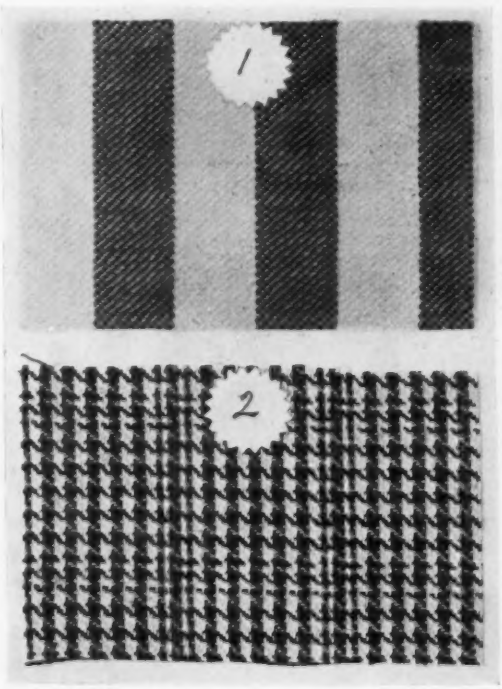
Some of the selling agents, more especially those who operate on the lower grade lines, have been showing their fall samples since the early part of December, but up to the last two weeks business has been apathetic and dragging. With the advent of buyers in the market from the West and South, a greater degree of activity is manifested.

The generally prosperous conditions warrant a record breaking season, and at present there is every reason to believe that the most optimistic predictions will be realized. As yet no startling or even material development has taken place. Buyers seem to operate with greater caution than hitherto, owing probably to the fact that the status and styling of the numberless fabrics are somewhat uncertain. Price conditions also contribute to cautious and careful buying, for it is said by some agents that their quotations show no advance over those of a year ago, and claim in a few instances that prices have declined. This decline, however, is restricted to a few clays, thibets, and allied lines, and does by no means apply to the market as a whole. On the contrary advances are witnessed on the majority of the ranges now opened, while last year's prices rule on only a few of the staples.

The mills that produce fabrics of standard worth, both in texture and style, are in a position to quote what they claim to be adequate advances without detriment to their output. There appears a slight tendency to break away from the fancy worsteds, which have been so long predominant, although thus far the bulk of the business transacted has been on this character of fabric. The new trend is toward a softer finished wool

fabric on the order of a cheviot without the rough surface; this is termed velour and has attracted very favorable attention. On the whole the outlook for woolen fabrics is decidedly more encouraging.

In any event, woolen fabrics are always in better request in the heavy weights, but apart from this fact there is beginning to be a tendency to place orders for such goods in larger volume than has characterized the market for the last few heavy-weight seasons. A slight change is also noted in the shades booked; for several seasons grays have been most prominent, but this season brown shades in checks and overplaids are making considerable progress, more particularly in the medium grade of mercerized worsteds.



The status of the overcoatings is still undecided; many buyers favor quiet, unobtrusive fancies, and a large volume of business has been achieved on such goods as gray mixtures and a few browns and other color combinations. Plain fabrics have also been taken quite freely, black being probably predominant, in such fabrics as meltons and kerseys.

There are a number of overcoating lines yet to be shown, and therefore it is too early to state just what style will eventually be in the ascendant. Among the most important lines shown thus far are the following: standard clays, by the American Woolen Mills, in 11-ounce to 20-ounce weights, ranging in price from $1.25 to $1.90, showing a decline of approximately 5 cents a yard; standard unfinished worsteds, 14-ounce to 18-ounce weights, prices $1.30 to $1.85, subject to the same decline; standard serges, 16-ounce to 20-ounce weights, price ranging from $1.10 to $1.87 1/2, prices lower in some instances 5 cents a yard than last year's quotations. It is said that the serges produced by the Wood Worsted Mill possess exceptional value.

The American Woolen Co., Dept. 3, has opened cassimere overcoatings and woolen suitings from $1.00 to $1.50, also hard finished cassimeres from the Anderson Mill at 87 1/2 cents. The Earnscliffe Worsted Mills are showing the Para mercerized lines at $1.15 to $1.50; silk mixtures, $1.50 to $1.65. The Greenville's worsted suitings are quoted at $1.30 and $1.35.

The William Wood & Co. all-wool and silk suitings in fourteen different styles range from $1.05 to $1.10.

Greeley, Cushman & Record are showing the Waverly and Old Town cassimeres at 90 cents; also the Pittsfield and Old Town all-wool cassimeres at $1.00.

J. L. T. D. Peck is showing several lines of worsted finish cassimeres, from 55 to 77 1/2 cents.

H. W. T. Mali & Co. have opened Rhode Island fancy mixtures at $1.20, $1.37 1/2 and $1.45; silk finished worsted fancies at $2.12 1/2 and unfinished at $2.25.

George H. Gilbert Manufacturing Co. are showing 18-ounce all-wool cassimeres at $1.42 1/2; 17-ounce all-worsted fancies at $1.80.

L. Bachmann & Co. are showing lines of worsted suitings from the Excelsior Mills in 3/4 at 37 1/2 cents, and 6/4 at 87 1/2 cents.

Wendell, Fay & Co. have opened lines of the Swift River overcoatings at $1.67 1/2; Middlesex velour suitings at $1.80.

Stevens, Sanford & Jordan are showing

the fancy worsted lines of the Nemasket Worsted Company at prices ranging from $1.75 to $2.15.

DRESS GOODS.

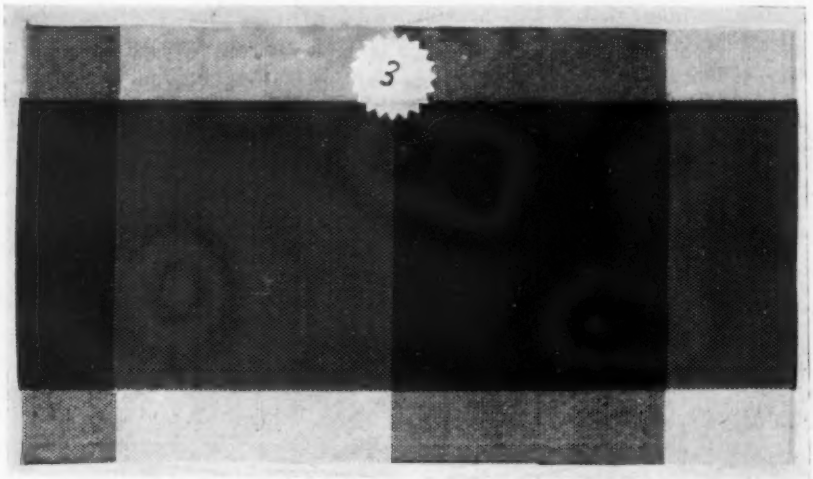
That the situation is eminently satisfactory is the opinion unqualifiedly expressed by all the selling agents, both those representing foreign accounts as well as domestic mills.

The lines for fall are partially in embryo, a few only having thus far been opened and shown in a general way. Frequently large factors in the trade, such as jobbers and cutters (which absorb an enormous supply) are often given the privilege of looking over advance samples that are not open to the ordinary operators, and it is said that some numbers of new lines have been completely absorbed by such factors. The shades which promise to be most popular for fall are tans, golden browns, and dark red of the Burgundy variety.

The bulk of the business booked calls for staple fancies in low grade mixtures, and for fancy broadcloths in rich, unobtrusive combinations. Plain fabrics such as chiffon broadcloths, voiles and panamas are bought in large quantities by the cutters.

In the higher grade goods silk voiles have easily been the favorite with the buyers and to such an extent that many of the lines are virtually sold up. Fancy checked voiles, in monotones and in colors, have also been freely ordered out for future delivery. Crisp and snappy worsted voiles are today the favorite with the popular trade, and are the most prominent among the lines of the various importers at from 70 cents to $1.25.

The present spring season is spoken of as one in which the fancy end has the supremacy, notwithstanding the large demand for plain sheer goods as noted. Stripes and checks have been taken by all classes of trade. Shepherd checks are very much in evidence both for present consumption and for fall. These are shown in numerous varieties as to pattern, in black and white and gray mixtures.



Striped wool suitings in two-toned effects in tan and white and gray and white on the Pekin variety as illustrated in Fig. 1 are the latest development. This fabric is 43 inches wide, at 85 cents, and shown by J. Grose (Dommerich & Co.).

Mohairs and sicilians are still taken in moderate quantities and such houses as make a specialty of bringing out this fabric report that they are not suffering for the lack of orders. The principal New York importers of mohairs are Clough, Pike & Company (who sell to jobbers and cutters only), Stavert & Zigonala, Frederick Butterfield, Arthur Walker & Co. and J. Grose & Co. Fig. 2 shows one of the popular staple fancy mixtures, produced by the Broadhead Worsted Mills 36 inches wide at 37 1/2 cents.

SILKS.

A decidedly better feeling exists in the silk market, and the present situation from the output point of view is a vast improvement over the conditions which have prevailed for several seasons. The present demand has more than caught up with the producing capacity of the mills, with the result that it is difficult to secure spot delivery of many desirable lines.

Prices have advanced fully 10 per cent. on all classes of silk fabrics, due in a measure to the advance of the raw silk, which is stated by some authorities to be purely fictitious. Some of the largest producers will without doubt reap a goodly harvest, having covered their requirements before the advance of the raw silk took place.

Box loom fancies are the most prominent in the present large demand. These fancies comprise numberless checks, overchecks and plaids principally of light color combinations, white ground being predominant. Roman stripes are also shown in ranges of high colors.

The most prominent of the fancies, and what may be the feature of the fancy end, is the call for 3/4-inch and 1-inch black checks as shown in Fig. 3. This is a 20-inch louisine, 57 1/2 cents, produced by M. C. Migel & Company.

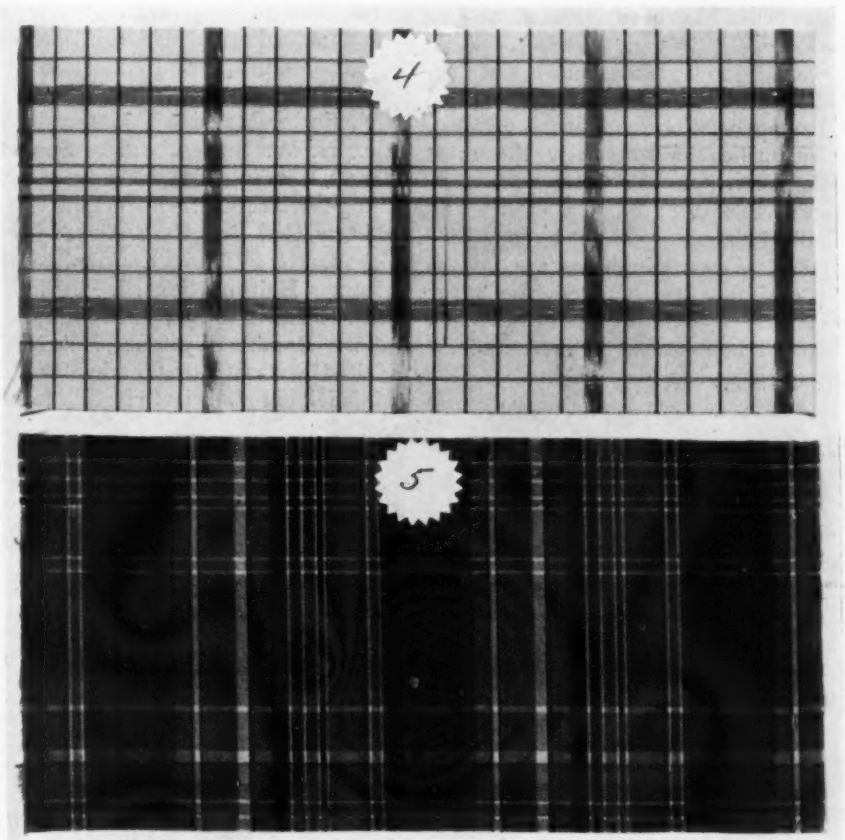


Fig. 4 shows one of the new fancies sold by Valentine & Bently, being a white ground with a hair-line check and Persian overcheck, 20 inches, navy and green plaid with a white line overplaid.

Fig. 5 shows a green and plaid combination with white hair line, sold by Cronemeyer

(William Iselin), 20 inches wide, at 57 1/2 cents.

WASH GOODS AND COTTONS.

The market is still in a feverish condition, many lines of staple tickets being completely out and none in sight; some further advances are threatened on absolutely staple goods, apparently without warrant, and without cause other than that the mills are supplied with orders for several months to come, and that in some instances an advance of 10 per cent. has been granted to the operatives.

The wash goods situation is healthy among the jobbers, such goods as printed batistes having been bought by the retailers in such quantities as to satisfy the most pessimistic seller.

Percales are scarce; galatea cloths and goods of allied character cannot be found for spot delivery. Dress ginghams are not to be had in desirable styles, unless the buyer covered several months ago. Prints have been advanced half a cent a yard, and an enormous quantity has been sold.

AMERICAN COTTON MANUFACTURERS' EXHIBITION.

The accompanying diagram shows the general plan of the floor space in the Armory Building, Philadelphia, where the exhibition will be held in connection with the meeting May 15-16. Although the literature relating to the exhibition has only recently been sent out and but a few weeks have elapsed since the work was begun, a good amount of space has already been allotted and many more applications are pending and under consideration by intending exhibitors who have not yet been able to reach a definite conclusion. There are always a number who want to see who is going in and whether it is going to be a success or not, and to such doubters it can be said that seldom at this early stage has space for any trade exhibition been so liberally taken by so many representative concerns. It is the purpose of the management to avoid the allotment of too much space to any one concern, preferring rather a large and representative list of exhibitors so that the exhibition may be comprehensive in its scope

The following is not a complete list of those to whom space has been allotted, as applications have been coming in every day, but enough names are given to indicate the representative character of the exhibitors. The shaded spaces in the diagram indicate those that have been taken up to the time of writing.

Draper Co., Lowell Machine Shop, General Electric Co., Westinghouse Electric & Manufacturing Co., George W. Stafford Co., Caldwell-Gildard Co., American Warp Drying Machinery Co., American Moistening Co., Foster Machine Co., Textile Machinery Co., H. W. Butterworth & Sons Co., Universal Winding Co., Holyoke Machine Co., Cling-Surface Co., Philadelphia Drying Machinery Co., Bell Pure Air & Cooling Co., Schaum & Uhlinger, Wm. Sellers Co., Thomas Halton's Sons, J. H. Billington Co., J. E. Rhoades & Co., E. F. Houghton & Co., Chas. Bond, Keystone Lubricating Co., United States Gutta Percha Paint Co., The Philadelphia Lubricating & Manufacturing Co.

The following committees have been appointed and will continue effective till after the Convention:

EXECUTIVE COMMITTEE.

T. Ashby Blythe, chairman; W. T. Galey, Chester, Pa.; D. A. Tompkins, Charlotte, N. C.; John Burt, Phila., Pa.; T. I. Hickman, Augusta, Ga.; John P. Wood, Phila., Pa.; Caesar Cone, Greensboro, N. C.; E. A. Smythe, Pelzer, S. C.; G. Gunby Jordan, Columbus, Ga.; B. B. Comer, Birmingham, Ala.; W. T. Maginnis, New Orleans, La.; Fred. A. Flather, Lowell, Mass.; Arthur Amory, Boston, Mass.; Walter E. Parker, Lawrence, Mass.; R. M. Miller, Jr., Charlotte, N. C.; Theo. C. Search, Phila., Pa.; W. A. Erwin, Durham, N. C.; B. Frank Mebane, Spray, N. C.; H. P. Meikleham, Lindale, Ga.; J. F. Cannon, Concord, N. C.; L. L. Lampton, Magnolia, Miss.; Garnett Andrews, Chattanooga, Tenn.; W. T. Tillar, Emporia, Va.; Leroy Springs, Lancaster, S. C.; Judge W. F. Cox, Anderson, S. C.; R. T. Fewell, Rock Hill, S. C.; John C. Cary, Lockhart, S. C.; E. A. Smith, Charlotte, N. C.; L. D. Tyson, Knoxville, Tenn.; Jos. Schwartz, Corsicana, Tex.; Paul J. Marrs, Henderson, Ky.; T. W. Pratt, Huntsville, Ala.; Wm. E. Hooper, Baltimore, Md.; J. J. Hooker, Cincinnati, Ohio; Henry Dexter, Pawtucket, R. I.; A. B. Mole, Montreal, Canada.

Chairman of all committees to be members of this committee.

COMMITTEE OF EXHIBITS.

T. Ashby Blythe, Chairman; Stuart W. Cramer, Charlotte, N. C.; A. H. Washburn, Charlotte, N. C.; John Hill, Atlanta, Ga.; Geo. Otis Draper, Hopedale, Mass.; R. A. Mackay, Readville, Mass.; H. W. Butterworth, Philadelphia, Pa.; Edwin Howard, Charlotte, N. C.; C. H. Hutchins, Worcester, Mass.; Sidney Payne, Boston, Mass.; M. H. Merrill, Boston, Mass.; E. W. Thomas, Baltimore, Md.; Frank B. Kenney, Lowell, Mass.; T. E. Connor, Westfield, Mass.; Roland Gerry, Pittsburg, Pa.; Herbert D. Colman, Rockford, Ill.; S. H. Steele, New York City; Wm. H. Harriss, Atlanta, Ga.; H. A. Tillinghast, Providence, R. I.; E. F. Hathaway, Boston, Mass.; F. H. Bishop, Boston, Mass.; D J. Danker, Boston, Mass.; E. S. Richardson, Pawtucket, R. I.

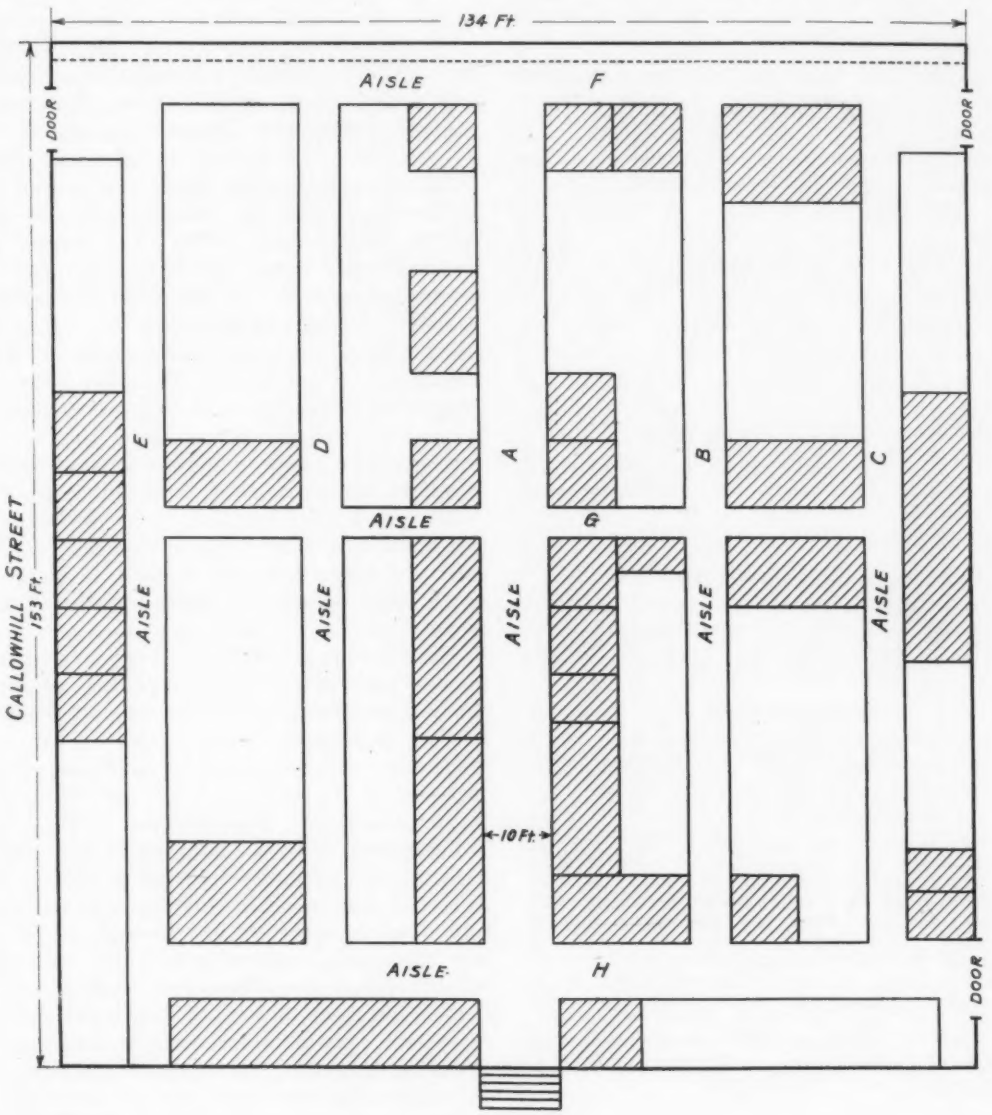


DIAGRAM OF ARMORY BUILDING IN PHILADELPHIA, WHERE THE TEXTILE MACHINERY EXHIBITION WILL BE HELD IN MAY.

ENTERTAINMENT COMMITTEE.

To be completed later.

LADIES RECEPTION COMMITTEE.

To be completed later.

GUEST COMMITTEE.

Col. Peter H. Corr, Chairman; Ridley Watts, New York; A. T. Bradlee, Boston, Mass.; Jesse P. Eddy, Jr., Providence, R. I.; F. B. Comins, Boston, Mass.; E. Lang, West Point, Ga.; Ed. D. Tannahill, New York; Hugh DeHaven, Brooklyn, N. Y.; F. W. Hackstaff New York; Jos. J. Smith, New York; John P. Marston, Boston, Mass.; J. H. Manley, New York; Fred N. Dillon, Fitchburg, Mass.; T. E. Ramsdell, Housatonic, Mass.; Samuel F. Patterson, Roanoke Rapids, N. C.; T. E. Hatch, Philadelphia, Pa.; Robt. Bishop, South Boston, Mass.; William Baldwin, New York; Elisha P. Cronkhite, New York; Sam. D. Brewster, New York; P. R. Richardson, New York; William Drewry, New York; William West, New York; Herbert H. Lehman, New York; Mr. Bowteler, New York; Fred. S. Bennett, New York; Wm. McKineley, New York; Reuben Lindheim, New York; Mr. Reever, New York; J. B. Tiedeman, New York; Mr. Dickson, New York; John Hanna, New York; H. S. Patterson, New York; Mr. Thompson, New York; J. Harper Poor, New York; Kenneth Hooker, New York; N. B. Day, New York; Fred Bailey, New York; Mr. Roberts, New York; J. C. Leslie, New York; Ivar L. S. Jostrom, Lawrence, Mass.; Mr. Farish, New York; Laurus Loomis, New York; John F. Conway, New York.

TRANSPORTATION COMMITTEE.

Chas. Hopkins, Philadelphia, Pa.; N. B. Kelley, Philadelphia, Pa.; C. B. Bryant, Charlotte, N. C.; C. B. Carter, Philadelphia, Pa.; G. W. Summerfield, Philadelphia, Pa.; Wm. Pedrick, Jr., Philadelphia, Pa.

FINANCE COMMITTEE.

Leonard Paulson, Chairman, New York; E. B. Bogardus, Philadelphia, Pa.; Jos. H. Parvin, Philadelphia, Pa.; C. H. Stevens, Philadelphia, Pa.

ENTERTAINMENT COMMITTEE.

Wm. D'Olier, Chairman; Jas. E. Mitchell, Miles P. Hoffman, Jos. H. Parvin, Walter Sharples, Jr., E. B. Bogardus, Arthur J. Fleming, Harry W. Taylor, Frank A. Snyder, Robt. M. Griffith, Fred Rakestraw, E. A. Burr, Jos. Mullineaux, Robt. P. Hooper, Wm. Spellissy, H. H. Hubbert, C. H. Stevens, Henry A. Seving, John Corbett, Geo. W. Chapin, Harry Thomas, Martin P. Glynn, H. M. Daniel, Jos. A. McCoy, T. E. Hatch, Horace W. Greenwood, Geo. C. Graves, Dr. E. W. France, Dr. Geo. W. Wilson, Lawrence McCormick, E. L. Provan, Geo. Swett, L. M. Maltby, Chas. E. Carpenter, Frank P. McFadden.

It is said that the yarn production of Verviers is over 40,000,000 pounds yearly.

The total foreign trade of the United States for the year ending June 30, 1906, was approximately three billion dollars, greater by more than three hundred million dollars than any preceding year.

AN EXPOSITION OF SAFETY DEVICES AND INDUSTRIAL HYGIENE.

There has been held in New York this month at the Museum of Natural History, 79th Street and Central Park West, an exhibition which is especially interesting, inasmuch as it is the first organized attempt to direct the attention of the American public to the necessity of doing something to lessen the causes of accident in industrial occupations and in railway and trolley traffic. The appalling loss of life in recent years has at last caused us to pause and demand that something should be done. In the older countries of Europe there are many associations for the prevention of accidents. Germany, France, Sweden, Austria, Italy and Russia have their permanent museums of security and industrial hygiene, where exhibitions of all sorts of safety appliances may be studied and literature and full information may be had by the manufacturer and the workman. Moreover the laws for the protection of life are much more stringent in those countries than here.

That sentiment has finally been aroused is shown by the auspicious opening of the American exhibition and by the largely attended banquet at the Waldorf-Astoria where men of national reputation gave expression to the need of organized effort to promote the much desired object. This first exhibition is to be the nucleus of a permanent museum of safety devices. It starts out modestly, but the grouping together of exhibits and information on this subject cannot fail to be of interest to any employer who is seeking to minimize the risk of accident in his plant. In subsequent exhibitions no doubt arrangements will be made for grouping the different appliances according to their adaptability to special industries. As, for instance, all the textile appliances should be grouped together.

The exhibition covered a wide range, embracing fire escapes, elevator guards, window safety guards, car couplings, engine stops, respirators and face masks to protect against dust and flying fragments, emergency and first-aid outfits, gear protectors, all sorts of

railway safety appliances, safety appliances for all kinds of wood working machinery, safety lamps, etc. There were also exhibits from the various museums of security in foreign lands, including their catalogues, photographs and other documents. The workmen's insurance societies of Europe were also represented in the way of reports and statistics and other literature. The foreign associations for the prevention of accident had their catalogues on file containing various instructions for the prevention of accidents in the different countries. Literature on industrial hygiene was also on file.

Among the exhibits that were of special interest to textile manufacturers was that of the Consolidated Engine-Stop Co., New York City, who had a very attractive display of their "Monarch" engine stop and speed limit system, consisting of various types of automatic stops, circuit breaker trips, vacuum breakers, etc., in actual operation. This system can be installed in any industrial plant and is an effective means to prevent fly wheel explosions caused by the engine overspeeding or racing. By means of electric connections the engine can be stopped from any part of the plant by merely pressing a button. It is a mistake to suppose that the engine can always be efficiently guarded by the engineer and the safety governor. There are very few plants where the engineer can be constantly within reach of the throttle and there have been cases where even that would have been of no avail. In one case a workman passing through the engine room with a ladder over his shoulder, caught it in some overhead wires which broke, fell, became entangled with the governor and stopped it. The engineer was busy for a few minutes at the other end of the room and had it not been for the "Monarch" stop there would have been a smash-up. The value of this kind of stop is particularly apparent when the accident occurs in some distant part of the plant, as for instance when an employe is caught in the machinery and to save his life it is essential that the power be immediately shut off. When the belting breaks, when the shafting or machinery is out of order, when a cylinder head blows off, in all such cases the automatic stop is invaluable. The "Monarch" engine stop is already in extensive use in many large textile plants and is coming into more general use as its value becomes better known.

The Westinghouse companies filled their space most attractively with large photographs showing their various products. They also had working models of patent brakes, automatic couplings, draw bars and various appliances equipped with safety attachments. They also showed one of their large switchboards.

The General Electric Company showed a slopeing machine so safeguarded as to obviate all possibility of accident. They also had two of their alternating current dynamos connected with two Corliss engines to furnish light for the building.

The Lunkenheimer Company of Cincinnati and New York showed their fusible fire plugs. Johnson & Johnson of New Brunswick had an interesting exhibit of outfits and supplies for first-aid to the injured. The Red Cross Company of Boston showed their emergency chart with outfit and first-aid devices. The Brown & Sharpe Mfg. Co., Providence, R. I., showed photographs of a great variety of machines and machine tools safeguarded. Dr. Detourbe, Paris, France, exhibited a line of respirators, goggles and face masks for workers in dust and lint and for protection against flying fragments. A. L. Freed, New York, showed various safety goggles. S. F. Hayward & Co., New York, had an extensive exhibit of all sorts of devices for safety from fire. The New York Edison Company showed motor machines and a new way of overhead belting; also protected gearing. Edmund Mather, Harrisburg, Pa., exhibited a blow-off protector for steam boilers. Various speed guards for elevators and automatic stops were shown and numerous gear protectors, safety lamps, etc.

Not the least interesting feature of the exhibit to one who is studying the subject was the examination of the reports of the work along these lines abroad.

The American Institute of Social Service, 287 Fourth Avenue, New York, under whose auspices this first exhibition was held,

is deserving of the support of all those who are in sympathy with the movement to minimize the loss of life and injury by accident, which in recent years has reached a point which will cause even the most careless to pause and consider means for its prevention.

AGAINST RAMIE.

[The following from the Manchester Guardian deals with a subject of special interest in America. Ramie has its place among commerical fibres, but the difficulties in preparing it for the mill after it has been cut are so great as to make it improbable that its manufacture into yarn, cordage and cloth will ever become a great industry. A great deal of money has been lost in attempts to establish the industry and any who may be inclined to repeat such experiments can read the article with profit. In the reply to this article The Ramie Co. lays stress on the value of ramie as a material for incandescent mantles, which may be conceded without in any way affecting the main contention by the Guardian's correspondent. Ed.]

"Scarcely a week passes but, in some form or other, there is a communication made to the press which may be classed as a 'bull point' for ramie. It is difficult to see why the matter should so persistently be advanced, for no one holds large stocks of the fibre and no one has a large and regular output. The only persons likely to have vital interest in the extension of ramie-growing are the makers of decorticating machinery and the possessors of land suitable for ramie cultivation. But in neither of these instances is there sufficient cause, for in the first case decorticating machines are not large or expensive, while the later stages of ramie preparation would merely require machinery which would otherwise be purchased, in another form, for some more easily worked fibre. Owners of land also are scarcely likely to press the point, for in the ramie-producing countries there is the most scepticism regarding its financial success.

"The only other persons likely to be interested are company promoters. As an example of what may be called the culpable thoughtlessness of some ramie promoters, it may be said that the writer was recently approached by a gentleman from India who, along with other business, was attempting to raise capital for ramie growing. On questioning him it was easy to see that he knew almost nothing about the matter, and he could only assert that his friends in India had secured the refusal of a tract specially suitable for ramie cultivation. He thought they knew all that was necessary to be known, but he was not sure. He was acting in perfectly good faith, and it is possible that his advisers were doing likewise, for the soil and available labor were all that were necessary. But there was an important element lacking, for the land was in one of the driest parts of India, and the ramie plant requires plenty of moisture.

"The stems of the ramie plant may be best likened to sticks of rhubarb, but they are very much longer. They are just as pulpy, just as full of sap, and of about the same thickness. It will be seen, therefore, that to ensure healthy growth a good rainfall is an absolute necessity, or else a system of irrigation on a large scale. It is a great mistake to think that because the ramie plant is a native of India it will grow anywhere in that country. It is a very hardy plant in a tropical climate, but it requires a large amount of water.

"After cultivation comes decortication, and here again a trial is necessary to show the difficulties still in the way. Up to the present time, to get a good ramie fibre, it is necessary to decorticate by hand, a process which consists of scraping away at the stem until the fibres are separated from each other and the sappy and woody matter removed. When it is remembered that only about 4 per cent. of dry fibre is obtained it will not be necessary to point out the slowness of production.

"There are, of course, decorticating machines, but one of the largest makers of these confessed to the writer not long ago that if he commenced ramie spinning he would buy hand-decorticated fibre. All the machines are rough on the sticks and break the fibres, while at the best they do little more than squeeze away a portion of the

superfluous juicy matter. Then, again, to decorticate ramie by machine means that the stalks must be treated green, for if allowed to lie very long they shrivel up and become hard and woody. This means a machine for every district where ramie is grown for the market, and also a mechanic to look after the machine.

"When ramie has been decorticated, either by machine or hand, it must be degummed, a process which is usually carried out in kiers. The sooner this is done after cutting the better, for after decorticating there is the risk of fermentation and a consequent weakening of the fibre. Here, again, clumsy and heavy apparatus would have to be installed in out-of-the-way districts, and here, again, water is necessary. One of the secrets of good ramie-fibre production is a thorough washing after degumming, for not a trace of caustic soda or other alkali should remain. In fact, the fibres should be not only well washed but neutralized and washed again, and this means plenty of water—in a country where water is scarce.

"There is another point about these decorticating and degumming machines which is also overlooked, and that is their short term of service. Cotton can be held over and ginned weeks, even months, after it is harvested, and but for that fact it would require at least four times the amount of ginning machinery now in use. Ramie must be treated at once, so that the apparatus has a very short term of usefulness every season. Following this as a matter of course, the apparatus has a very short life, for a machine never deteriorates so rapidly as when laid by for a few months.

"The actual spinning of ramie presents no appreciable difficulties if the proper system and right machinery are used at the start. Unfortunately, too many ramie spinners refuse to differentiate between long and short fibres, fearful of losing too much in waste. As about 40 per cent. of the fibres are comparatively short, and as the long fibres are about thirty inches long, it will be seen what difficulty attends the attempt to spin the two together. Yet this is being done, with the result that the long fibres are broken—or rather torn—into lengths of about twelve inches by the time they reach the combing machine. The resultant sliver contains, even then, fibres of widely varying length, and although some of the tow comes out at the later stages of combing, a large proportion remains.

"With every advantage in its favor, ramie is more difficult to work in its preparatory processes than either cotton, flax or wool. The resultant thread equals a good linen, and for some purposes is less desirable than a mercerized cotton. The treatment is somewhat similar to flax, but ramie must be decorticated before it reaches the stage ready for degumming or retting, at which stage flax has arrived already by its form of growth. Then, flax can be heckled after retting, but to treat ramie properly it must be first wound on a filling engine, as is the case with waste silk, and cut up into lengths suitable for economical treatment. All this means extra work and apparatus. Ramie enthusiasts never push forward the legitimate comparison with flax, but prefer to compare ramie with cotton, taking care to draw the parallel with American and not with Egyptian or Sea Island.

"Ramie has its uses, and the writer believes for instance, that it is specially adaptable for incandescent gas mantles. Yet, although he has tried ramie mantles against other makes and questioned others who have done the same, he has found no advantage in the ramie product as far as actual use goes. It may lend itself better to the chemical processes, but does not apparently excel in use."

Following is a reply to the above article:

"Sir,—We have read your correspondent's article in the "Manchester Guardian" of the 7th inst., and regret that as his knowledge is evidently very small he should have written in so authoritative a manner. We consider the article calculated to injure the business of ramie manufacturers with the general public. It will not mislead anyone who understands the matter, but as our trade in this fibre has been built up during the last ten years by dogged determination, and we now employ nearly 300 workers, engaged chiefly in making incandescent mantles (which we send all over the United Kingdom, besides the colonies, South America, India, etc.), it

is of the utmost importance to us that the real facts should be known. We do not consider that his general statement as to land, planting, and difficulty of growing and decorticating needs any reply, except to say that in comparing the stem to a rhubarb stem he might just as well have told us that the stem was the thickness of a piece of chalk, as it is so far from the actual fact. The writer has had it in the green and dried stem, and has not seen any much thicker than an ordinary lead pencil; in fact, it is much the same as our ordinary stinging nettle in the late autumn. Further, we have never seen any ramie fibre 30 in. long. Evidently this is a slip for 'raw grass.'

"But it is to the last few lines of his article that we take exception, where he says: 'Ramie enthusiasts never put forward the legitimate comparison with flax, but prefer to compare it to cotton, taking care to draw the parallel with American, and not with Egyptian or Sea Island.' Well, we have made cloth of various descriptions to take the place of each of these articles, and ramie has been proved in working to be better and stronger than linen or Sea Island cotton, weight and width being equal in both cases. Again he says: 'Ramie has its uses, and I believe it is specially adapted for incandescent mantles, but it does not excel cotton in use.' It is this 'but' we desire to deal with. We are quite aware of the difficulty of a specialist in looking at a light telling the difference between a 70-candle power and a 100-candle power when in actual use, but an ordinary person can tell the difference when a 70-candle power light dwindles down to 30-candle power, as it always does with a cotton mantle, but never with a ramie mantle. This is accounted for by the fact that ramie, when properly degummed, is an ideal fibre for this purpose, because a mantle made from it does not shrink and therefore remains in the hot part of the flame. Cotton, on the other hand, even the best Sea Island, gives a mantle that starts very well, but in a very few hours' burning loses 30 per cent. of its light, and keeps on losing it.

"If your correspondent would get the opinion of a few gasworks managers or gas-lighting superintendents I think they would soon convince him of the fact that ramie is, for some purposes, of more value than cotton.—Yours, etc.,

"The Ramie Company, Ltd.
"Bradbury, near Stockport, November 8."

A GERMAN VIEW OF THE COTTON QUESTION.

From the Berlin Textil-Zeitung.

The last International Cotton Congress held at Bremen adopted the following resolution: "The Congress emphasizes its strong conviction that an increase in the supply of cotton is an absolute necessity for the future welfare of the entire cotton industry, and urges its members to use every means for the extension of cotton cultivation."

Certainly this is a timely resolution which has been endorsed in so many different forms that the Congress could not well avoid repeating it again. Judging, however, by previous experiences, this resolution will go the way of all the rest and be deposited in the archives as a valuable contribution to the discussion of the cotton question, but with no influence in solving that question.

In spite of constant agitation it is not yet recognized that the Government must take active part in the work of extending cotton cultivation in order to obtain results. No great results can be hoped for without official participation and support. The problem extends far beyond the limits of the cotton industry. Alongside of the fact that a state of general indifference prevails the actual results fail to convince us that the cultivation of cotton is making progress. If one will study statistics with a magnifying glass he will find that very little has been accomplished. The snail-like progress in developing the cultivation of cotton leaves no room for the hope that the present generation will ever see any improvement of conditions, in which the controlling factor now is the domination of the United States of America.

To understand this one has only to take a cursory glance at conditions in the cotton industry of England. England, as is well known, is the leading consumer of cotton in the world and is consequently the most interested in the extension of cotton cultivation. The conditions for obtaining independence of

the American cotton monopoly are the most favorable in England. There are vast areas in the English colonies adapted for the cultivation of cotton. England is the richest country in the world and her capital is constantly seeking new opportunities for investment and does not shrink from the risk that enterprises in the colonies involve. The prosperity of the cotton industry is of far greater importance to England than to any other country. As a consequence of these conditions relatively extensive means have been adopted there to solve the problem. The British Cotton Growing Association has had a large amount of money at its disposal. What are the results? Take a look at the figures of the English cotton imports and the countries from which the cotton comes.

In May, 1906, the cotton imported into Great Britain amounted to 1,050,523 cwt., of which 82,655 cwt. came from English colonies exclusive of Egypt; 75,790 cwt. came from the British East Indies where cotton has been raised from time immemorial, without, however, bringing the quality to the desired standard. How much cotton was supplied by the other British colonies in Africa and America where the British Cotton Growing Association has been particularly active? From the British West Indies, 3,308 cwt.; from British West Africa, 2,633 cwt.; from British Central Africa, 450 cwt.; from British Guiana and Honduras, nothing; from other British possessions, 4 cwt. Among the last-named countries are some in which cotton growing has been established for many years and in which extraordinarily favorable climatic conditions are found.

After examining these figures the conclusion is unavoidable that the results obtained by British efforts amount to very little. English newspapers and trade papers contain long and glowing accounts of the favorable prospects of the cotton growing industry in British Africa. West Africa, Nigeria, and lately Rhodesia have been held up as the great cotton producing countries of the future. The reader sees swimming before him vast imports of cotton from these countries into England. Everything is pictured in the most rosy colors and he is told how extensively cotton is to be cultivated in those distant lands. As a matter of course the reader expects to find evidence of the results in the figures of cotton imports, but is astonished to find, as we have stated, only 450 cwt. from British Central Africa, and 470 cwt. from British East Africa. How long will it be before African cotton becomes a factor in the British market?

Everyone must experience the same feeling when he examines the figures of colonial cotton imports into Germany and sees what a sorry prospect there is of material results in spite of the agitation to promote cotton cultivation in the colonies and lessen the weight with which the American cotton monopoly presses on the German industry. There is a widespread indifference to the cotton question although the importance of our gaining commercial independence from America has attracted much attention during recent years. In order to avoid a tariff war we have repealed a part of our own tariff law and the strongest supporter of the Imperial Government must concede that this action has resulted in but very little advantage to us. In spite of our concessions the conviction grows stronger that we have not secured commercial peace with America. A tariff war must come. It is but a question of time and this idea is constantly emphasized by events. Whether the tariff war comes quickly or is delayed we must prepare for it. There is no better preparation than making ourselves independent of the American cotton supply. Every step forward toward this independence strengthens our position and increases the chances that America, forced to consider her own position, may make advances to us. Words must give way to action and the dullest cannot fail to understand that the cotton problem is one of the most important questions of the day.

America has already made a treaty with Brazil by which American goods are admitted into that country at a preferential tariff rate. That means an important commercial advantage in South America. A long step has been taken in forcing European goods from the Western hemisphere. The action of Brazil in making concessions to America emphasizes the fact that the republic is a large purchaser of Brazilian coffee, the most important product of that South American country. In order to strengthen

the position of European countries, and particularly that of Germany, in the Brazilian market it is necessary to increase not only our purchases of coffee, but of other products as well. Among these products cotton occupies an important place. Every step in the development of the Brazilian cotton crop serves Germany's interest by binding tighter the bonds that unite Germany and Brazil. As a consequence the development of cotton cultivation in Brazil by German capital is of extraordinary importance. Germany cannot lose the South American market without suffering tremendous loss. The same conditions obtain in Argentine, where also the cultivation of cotton is the best means of promoting the European trade with that country.

Is Germany to remain indifferent to the conditions we have outlined? It seems impossible to dispel the fallacy that the cotton question concerns only the cotton trade. Until this error is dispelled the best resolutions by cotton congresses in favor of the extension of cotton cultivation will go for nothing.

THE FIRST TEXTILE SCHOOL.

BY JAMES STRAND.

A seemingly endless inquiry is opened up by a reader who asks when and where the first textile school was opened. The inquiry may be narrowed down by reflecting that until the advent of steam power and the closer sub-division of labor there could be little need of organized instruction. In the spinning-wheel days children learned to spin and card much as they learned to sweep or cook. When what had been a cottage industry began to be a factory business the need for special teaching became more evident and it is probable that in the last quarter of the 18th century textile teaching of a more or less casual and informal sort was first imparted to a few people. If the lessons were occasional or sparsely attended that would be explained by the excessively long hours of labor. Until 1847, when the Ten Hour Act was passed in England, there could be little leisure for acquiring knowledge and until the period between 1802-1815 spare time was virtually unknown among mill workers.

Primary education was only obtainable then in Sunday schools for the bulk of the people and technical education had no recognized value until 1867 when an international Exposition in Paris showed that the Continentals had been learning and had made immense use of the object lessons furnished by the London Exhibitions of 1851 and 1862. Only then in England was technical teaching seen to be of vital necessity to the community. It is to the Continent of Europe that one would look for early examples and the first that has been discovered dates from 1810 when a work shop devoted to cotton spinning was installed temporarily in the Conservatory of Arts and Trades in Paris. It is said that this school helped to train a considerable number of workmen. A weaving school was founded in Verviers (Belgium) by Mr. Lambelet in 1843. After that time such institutions became common and were promoted by industrial societies and others in Continental countries. Taking one trade with another it is unquestionable that the Continentals maintain their lead in this important department.

Had certain proposals, made first by John Bellers in 1696, and warmly advocated by the statesman Pitt in 1796, been adopted, France might have been forestalled by England. Bellers had a scheme for a "Colledge of all useful trades," in which there were to be 200 people, including "2 linnen and 2 woollen weavers, 2 flax-dressors and thred-makers, 2 spinners and carders for stockins and 20 linnen and 20 woollen spinners and carders." The workers were to be taught their trades and to be paid to work at them and to instruct the young. The college was not quite the sort of institution to which we apply the same name. It was to be a work-house, a labor-colony, an instrument for the better care of the destitute poor. In Beller's own time, and again a century later, the proposals fell through and not until 1817 was technical education made a part of the industrial training schools which are half penitentiaries and half boarding schools to this day. It is not

known that in any of these establishments textile arts are taught, but it is possible that the most ancient of all textile schools were inaugurated to save some poor wretches from starvation.

WOOL COMBING FOR THE WORSTED TRADE ON THE NIP COMBING MACHINE.

BY JOHN BROWN.

Although by far the greatest number of combing machines used in the worsted trade in both Great Britain and America are of the Noble type, yet in combing long and low qualities of wool and hair the Lister or nip comb still holds its own. Owing to its open construction and the ease with which it can be adapted to comb the longest staples and to deliver and draw them off without any risk of doubling ends of fibres, it is in marked contrast to the Noble and square motion combs, neither of which can claim these advantages.

The nip comb was first made into a workable machine by the late Lord Masham, working in conjunction with the late G. E. Donisthorpe, and although used today chiefly for long wool combing it is worthy of note that the first lot of botany wool which was successfully combed by machine was done on the nip machine in the early '50s of the last century.

Although many alterations have been made in the details of various parts since it was first invented, yet the machine today, Fig. 1, consists of the same principal parts; viz., feeding head, A, Fig. 2; press brush, B;

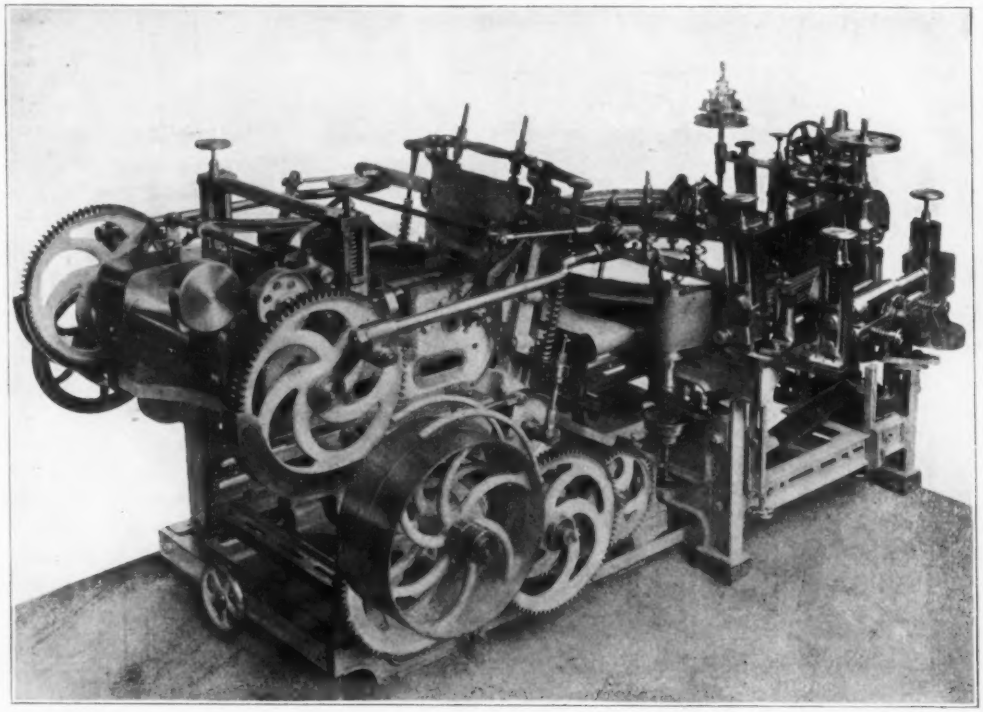


FIG. 1.

gill and fallers, C; oscillating nip, D, actuated by cam, E; carrying comb, F; circle dabber, G; carrying circle, H; draw-off rollers, J; and calender rollers, K. There is also a stripping apparatus not shown in Fig. 2. The ground plan, Fig. 3, shows more clearly the positions of the various parts. The letters and parts correspond to those in Fig. 2. The feeding head is constructed on the same principle as an ordinary gill box except that the fallers

are curved, Fig. 4, to conform to the carrying circle. Instead of front rollers there is the nip, which especially distinguishes this from other wool combing machines.

The faller dabbing brush, B, presses the wool well into the fallers and holds it while the nip is drawing to prevent any fibres passing to the carrying circle without having been cleaned by drawing through the faller pins. The fallers, C, are actuated by ordinary gill screws; and in order that the wool may draw freely through them they are heated by gas jets. The nip, D, consists of two steel jaws; the top one wedge shaped and the lower one grooved, in order to grip firmly the tuft of wool. The closing and opening of the jaws is controlled by tappets of peculiar shape fixed at the base of the nip frame, Fig. 5. The pulley which rests on the tappet is fixed to the sliding part of the nip frame. The arms for actuating the top jaw are fixed to the frame and as the cross bar is a compound lever the movement is of the simplest kind and not liable to get out of order. Fig. 6. The carrying comb, F, is actuated by a crank, F^1, and its position controlled by a spindle fixed on a movable socket. The dabbing brush, G, presses the wool into the carrying circle, H, after the carrying comb has delivered it. In order that the tuft may not slip, the pins in the centre row of the circle are rather longer than the

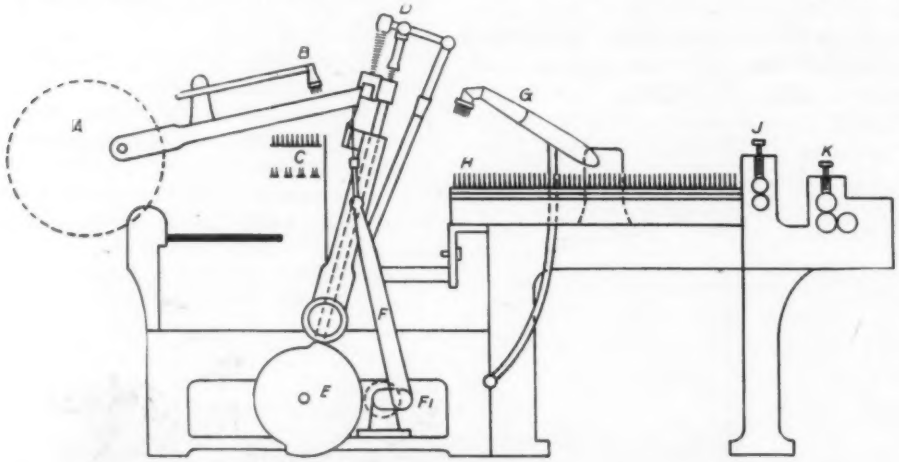


FIG. 2.

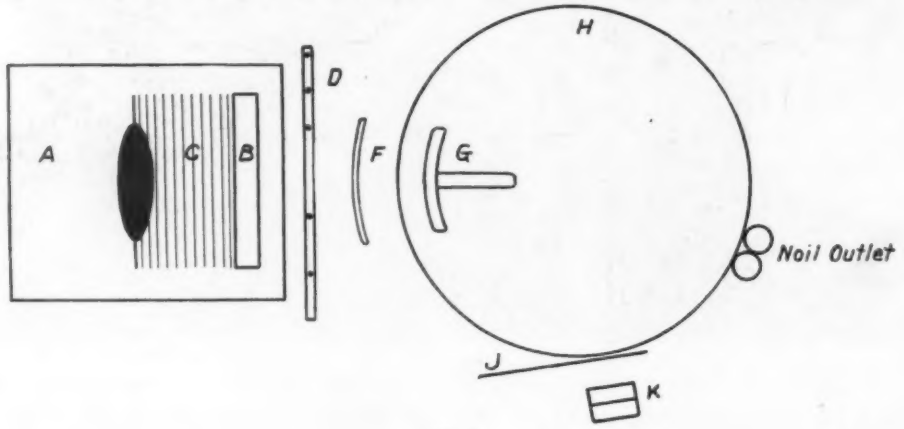


FIG. 3.

others. The draw-off rollers, J, are ordinary fluted rolls and are parallel to the circle. The calenders, K, are smooth and convey combed sliver to the can or other receptacle.

The nip derives its backward and forward motions from a crank wheel attached to the back shaft. The whole gill head is fixed on a slide, and by means of a screw can be put nearer or farther from the circle as required. By seizing the projecting ends of the fibres

FIG. 4.

and drawing them through the fallers the nip does the principal part of the combing. As soon as the nip has traveled the whole distance a faller drops leaving a tuft ready for the nip to draw when it returns to its first position. The wool is laid evenly in the fallers by a wooden press roller, which works in the space between the back roller and fallers, and is pressed well in at the delivery end by the brush, B^1, to prevent it rising when the nip begins to move forward and away from the fallers. When the nip has traveled to its full extent it is met by the carrying comb (which consists of two long rows of pins), which, gently pressing against the nip, just pass through and hold the small portion of tuft projecting through the jaws of the nip. As the jaws open the tuft is conveyed to the carrying circle and laid over the rows of pins, into which the tuft is pressed by the dabbing brush, G. The circle, H, conveys the wool, (one end of which has already been cleaned by passing through the fallers) to the draw-off rollers, which pull the wool through and out of the circle, thus clearing the other end of the staple. The remnant left in the circle is noil, which travels forward and is lifted out by knives or a pusher. The emptied part of the circle goes around to be refilled.

It will be obvious to the most casual observer that in order to carry out these processes properly and to the best advantage great care must be exercised in timing and setting the various parts of the machine. The press roller must be so accurately set that it presses the wool evenly along the whole length of the fallers. The nip must close, draw and finish its draw just before the faller begins to drop, or the tail end of the staple will not be properly cleaned. The jaws of the nip must fit exactly all the way across or they will either leave white tufts when drawing wool through the fallers or cut the fibre. When the jaws get dull or out of line the best way is to take them out at once and with a little fine emery grind them true. The carrying comb with its two slender rows of pins must just meet and press against the nip before the jaws open or the tuft will fall. It must also move in such a radius as to deliver the tuft as far over the circle as required. The dabber, G, must be timed to press the

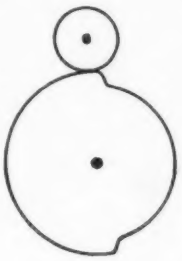


FIG. 5.

wool into the circle as the pins of the carrying comb are drawing out of the circle. The carrying comb, which works on the principle of a compound lever, needs great care in setting, but after being once set properly needs little alteration unless there is a great change in the class of wool to be combed. Another part that requires great care is the cut-off knife, which is fixed between the circle and the draw-off rollers at the end where they are nearest the circle. If set too far forward more noil will be made; if set too far back there will be a danger of slubby sliver, one of the worst faults a top can have.

It is very important with the finer classes of carded wool that the sliver should be fed into the machine with the strong end of the fibre leading, or opposite the position in which it leaves the cards. When first introduced the fallers and nip instead of being curved to radius of circle were straight. This made a heavy noil and backing rollers were used

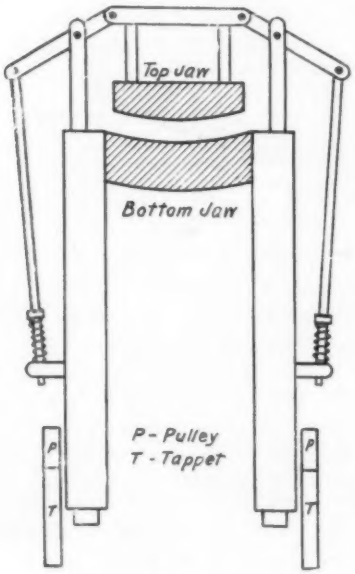


FIG. 6.

to take long fibres out of the noil before it was finally stripped from the circle. Various contrivances were tried to overcome this, among them flexible carrying combs, which were straight when close to the nip; but on leaving the ends were raised and the comb became somewhat nearer the shape of the circle when at delivery. Eventually the Busfield patent with fallers, nip, and carrying comb at the same radius as the circle overcame the difficulty and thus did away with one of the weak points of the nip wool comb.

A weak point in the nip comb is that if the carded stock is rough and neppy and if the fallers do not clean it thoroughly there is no remedy except recombing. Several attempts have been made to overcome this, but with no great amount of success. Throwing the wool further over and clearing the inner part by a small circle working from the circle has been tried, also extra nips, but good carding or preparing is the best remedy yet. Another weak point when combing some classes of wool is that the rollers being placed in a horizontal position all the long fibres are put on one side and the short fibres on the other side of the sliver. This makes what is called the "hen wing," and the difficulty lies in making a nice sliver from wools that contain a large percentage of short fibres. However,

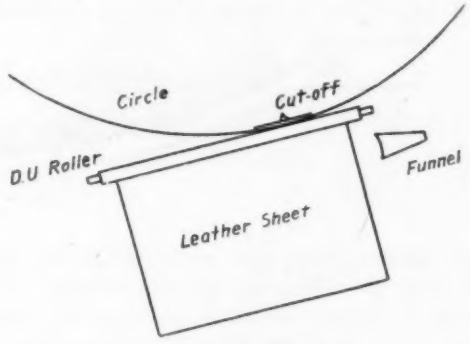


FIG. 7.

Ambler's method of drawing the sliver through a funnel placed at the edge of the leather diagonally instead of in front is about the best way out of the difficulty that has yet been invented, Fig. 7. Another weak point is that it is almost impossible to get as much tear from short wools on the nip comb as can be obtained on the Noble or square motion combs.

Although the nip has its weak points, it also has its strong ones. Once properly set and with suitable material it will with a moderate amount of attention do good work and plenty of it, costing but little for repairs and renewals of either circles, leathers, fallers, or brushes. Another good point is that during the process of combing all the fibres are kept in one direction: a decided advantage, and tending to make a well-finished and good-spinning top. Although supplanted to a great extent in the short wool trade by the Noble and square motion combs, yet for very long and heavy wools the nip comb holds its own today.

Cuban exports for the fiscal year ending June 30, amounted to $101,165,992; the imports to $92,959,057.

TEXTILE PROCESSES.

EDITED BY E. A. POSSELT.

OUR TEXTILE SCHOOL.

STRIPE AND CHECKERBOARD SATINS.

This system of weaves means the combination of warp and filling effect satins combined to form either stripes or figures in the general effect of the fabric, as the case may require. Weaves thus produced are extensively used in connection with the cotton trade, although they also find use with silk and worsted dress goods, etc. However in the latter instance the affair refers always more or less to small effects compared to the cotton trade and where large, prominent effects are frequently met with.

As will be readily understood, the 5, 6 and 8 leaf satin, both warp and filling effect, are the weaves most frequently met with; although in connection with high count structures we will also come in contact with the 10 or 12 leaf satins.

In laying out the plan for the new combination weave, always arrange sinkers opposite raisers at the joining of the warp and filling effect, and this both warp and filling ways in the design provided the latter refers to a checker board or figured effect, whereas in connection with stripe effects, the cut-off from warp to filling effect, or vice versa thus referred to, has only to be taken care of warp ways.

By the item of cutting-off warp from filling effect, thus referred to, in the weave, we mean that the last thread in one effect must always interlace opposite to the first thread in the joining effect, this feature producing the required sharp cut-off for each effect in the fabric.

In order to simplify the affair to the reader, i. e., the student, these warp and filling effect combination satins may be subdivided into:

1. Stripe effects (see Figs. 1 to 7 of the accompanying series of weaves and illustrations).

2. Plain checker-board effects (see Figs. 8 to and inclusive 11).

3. Fancy checker-board effects (see Figs. 12 to and inclusive 15).

4. Figured effects (see Figs. 16 to and inclusive 21) and

5. Combination effects (see Figs. 22 and 23).

With reference to the construction of stripe effects, the affair will make little difficulty to the student, for the fact that after constructing a certain number of warp threads with one effect and when commencing to put down the first warp thread of the next effect, all the student has to do is to be careful to have these two joining threads (the last one of the one effect and the first one of the other effect) work opposite, i. e., raisers opposite sinkers.

This same arrangement is to be observed by him when in turn, changing back to the first kind of satin.

It will be readily understood that at the same time in thus changing from one satin effect to the other, back and forth, the student must keep his mind on the repeat of the final combination, a feature which certainly in connection with plain stripe effects will make little difficulty to him, whereas in connection with fancy stripe effects, he has to be more careful; although in that instance the unit of the weave, if taken as a standard, i. e., multiple with reference to the combination weave, will always obviate any trouble, since in that instance his fancy stripe effect is nothing more but a plain stripe effect to be constructed by him.

Of the accompanying seven weaves and diagrams of stripe effects, Figs. 1 to and inclusive 4 in this way refer to plain stripe effects, whereas Figs. 5, 6 and 7 refer to what we term fancy stripe effects, a feature which will be readily understood by the student.

Fig. 1 shows a plain stripe effect, having for its foundation weaves the 5-leaf satin fill-

ing effect and warp effect, using 10 warp threads of each, i. e., two repeats of the weave for each stripe effect; the complete weave consequently repeating on 20 by 5. Examining this weave more in detail, i. e., with reference to the cut-off of warp threads 10 and 11, we will notice that warp thread 11 works, i. e., interlaces with the filling just the reverse from that of warp thread 10, i. e., raisers being opposite sinkers, if considering these two warp threads by themselves; this being the arrangement required for producing the sharp cut-off of one effect from that of the other effect in the fabric structure, i. e., compelling the two extreme situated warp threads of each effect to tie itself with the filling closely against each set to which they belong, whereas if this would not be observed by the designer, the first warp thread of the warp effect weave, i. e., warp thread 11 in our instance, would then have a chance to move towards the left in the fabric structure on account of then not being tied solid, giving in turn to the fabric a poor cut-off effect a feature occasionally met with in some fabric structures in the market, and which imperfection readily could have been overcome in the mill by the designer, or boss weaver, as the case may be, by exercising the proper care with reference to cutting off the joining threads of warp and filling effect properly, as previously explained.

The other cut-off in weave Fig. 1 in turn refers to warp threads 20 and 1, no special reference being necessary in this case, since it refers to nothing more than what has been mentioned before in connection with warp threads 10 and 11.

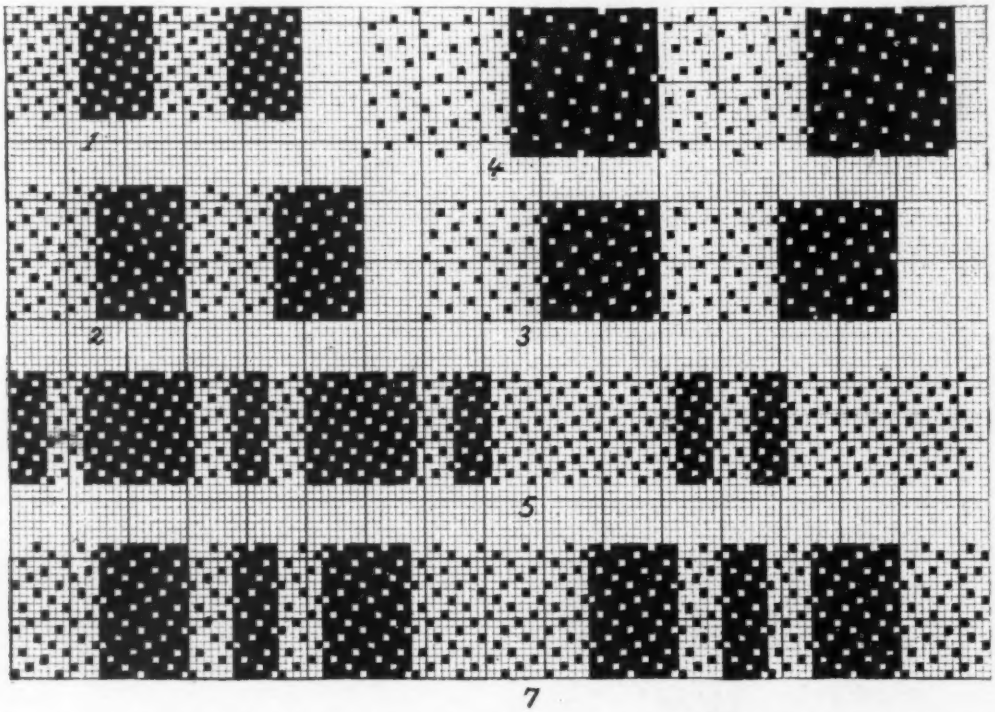


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Fig. 2 shows the combination of the 6-harness satin, 12 threads filling effect combined alternately with 12 threads warp effect. Warp threads 12, 13, 24 and 1 being the cut-off threads; the complete combination weave repeating on 24 by 6.

This 6-leaf satin produces one of the nicest strip effects in connection with these combination satin weaves, on account of its well broken up interlacings, the weave itself being also known as our crow-foot twill, finding extensive use in connection with all

classes of textile fabrics, on account of its beautiful effect to the face of the fabric wherever used.

Fig. 3 in turn shows us the combination of 16 warp threads, 8 leaf satin, filling effect to alternate with 16 warp threads, 8 leaf satin, warp effect; the complete combination weave repeating on 32 by 8 and as will be

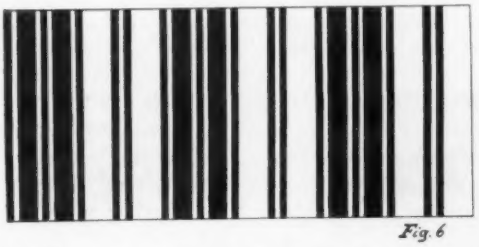


Fig. 6

readily understood, calls for 16 harness on the loom, i. e., 8 harness for the filling effect and 8 harness for the warp effect. Warp threads 16, 17, 32 and 1 are cut-off threads in the weave and clearly show in either instance, raisers opposite sinkers, in order to produce the clear line effect desired in the finished structure.

Weave Fig. 4 shows us two repeats of the 10 leaf satin filling effect to alternate with two repeats of the 10 leaf satin warp effect, the complete weave repeating on 40 warp threads and 10 picks; warp threads 20 and

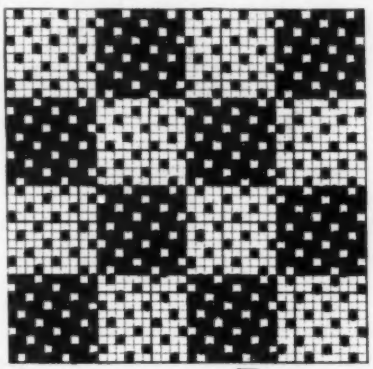


Fig. 8

21 and 40 and 1 being the cut-off threads. 20 harness are required for the execution of the combination weave in the fabric.

Weave Fig. 5 shows us the first fancy stripe effect combination satin weave, the same having for its foundation the 5 leaf satin warp effect to alternate with the 5 leaf satin filling effect, according to a given motive, i. e., design in fabric required, which in order to simplify matters, to the student is given in connection with diagram Fig. 6, the same being the fabric structure obtained in connection with weave Fig. 5; the black stripes in said diagram representing the warp effect 5 leaf satin in the fabric structure, vice versa the white effects in the sketch and which in turn represent the 5 leaf satin filling effect in the fabric structure as produced by means of weave Fig. 5. The distribution, i. e., arrangement of warp vice versa filling effect in the weave is arranged thus:

5 ends warp effect
5 ends filling effect
15 ends warp effect
5 ends filling effect
5 ends warp effect
5 ends filling effect
15 ends warp effect
5 ends filling effect
5 ends warp effect
25 ends filling effect
5 ends warp effect
5 ends filling effect
5 ends warp effect
25 ends filling effect

130 warp threads in repeat of the complete weave and which for its execution on the loom requires 10 harnesses fancy draw, using 5 harness for the warp effect satin and 5 harness for the filling effect satin.

In connection with weave Fig. 7 we show another fancy stripe effect of these satin combination weaves, using in this instance the alternate exchanging of the 6 leaf satin filling effect with the 6 leaf satin warp effect; the combination of these two effects used, being:

12 ends warp effect
6 ends filling effect
6 ends warp effect
6 ends filling effect
12 ends warp effect
24 ends filling effect

66 warp threads in repeat of weave, the same calling for its execution on the loom for 12 harness, i. e., for 6 harness for the

warp effect satin and for 6 harness for the filling effect satin.

As will be readily understood in connection with these stripe effects as thus shown in connection with weaves Figs. 1 to 7 we used in connection with each example, for

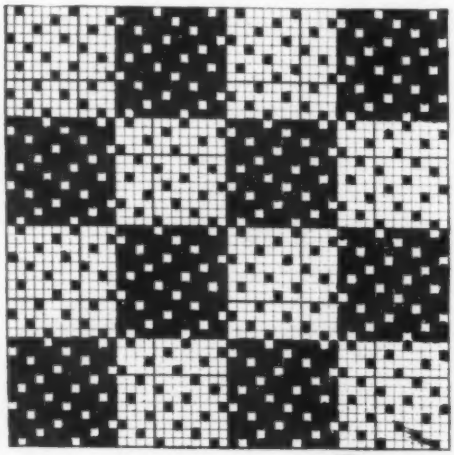


Fig. 9

the sake of the simplicity of the design, only as few multiples of the foundation weave as necessary to convey to the student the construction, as well as characteristics, of these weaves; it being readily understood by him that the same as we thus used only one or two multiples of the foundation weave, in practical work, and more so in connection with large effects, designs, etc., 3, 4, 5, 6, etc., etc., etc., multiples will have to be used by him. We have not used larger multiples, i. e., such as will be met with in practical work, since such complete designs would not be within compass of the page, besides being unnecessary to be quoted.

We will now take up our plain checker-board satin effects, as shown to the student in connection with weaves 8 to and inclusive 11. These weaves are extensively used in the manufacture of table covers, napkins, etc., and where loud big checks are required, although simple plain checks are met with in the manufacture of cotton, worsted or silk dress goods. In starting these combination weaves of warp and filling satins, exchanging both ways in the fabric, in order to form the characteristic checker-board effect, we must be careful never to start with the one raiser of the filling effect satin or the one sinker of the warp effect satin respectively in one of the corners of either effect, since this not only would produce extra tight weaving places in the fabric, for example, in connection with worsted dress goods, but at the same time later on in connection with figured effects, it then would be impossible to obtain the clear cut off of the fabric both warp and filling ways in the structure where warp effect exchanges with filling effect; and for which reason, it will be well for the student to notice more particularly how each satin effect has been started at its first warp thread and first pick and when it will be noticed that we have not been using a raiser or sinker, as the case may be, in said place, distributing at the same time the raiser or sinker used, as evenly as possible, considering all four corners of the check (and which naturally at the same time would also refer to a rectangle provided such would be called for in the effect of the fabric).

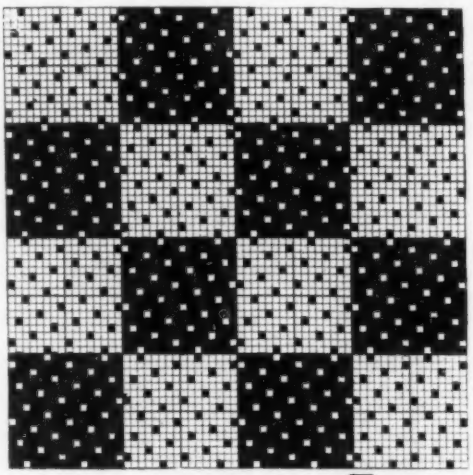


Fig. 10

Weave Fig. 8 shows us the plain checker-board satin, having for its foundation the 5 leaf satin warp effect to alternate with the 5 leaf satin filling effect for 10 warp threads and 10 picks both ways in the fabric structure, i. e., exchanging four multiples of the warp effect with four of the filling effect in either direction, the complete weave repeat-

ing on 20 warp threads × 20 picks, and which, as will be readily understood, can be woven on a 10 harness section draw, using 5 harness for each section, each section being in the present instance drawn twice over, on account of using two repeats of the 5 leaf satin for each effect. This will readily explain that if we had used three repeats of each foundation weave, each way for each effect, we then naturally in connection with the drawing in draft would have to draw each draft in each section three times over, etc.

Examining the starting of the 5 leaf satin in connection with both effects more in detail, we will notice that in each corner we started in connection with the filling effect either $_1—^1$ or $_3—^1$, and in the same way in connection with each warp effect either $^1—_1$ or $^3—_1$ in each one of the four corners of the check, in the one repeat of the weave.

Weave Fig. 9 shows us the plain checker-board satin having for its foundation the 6 leaf satin warp effect and 6 leaf satin filling effect, using in either instance two multiples of the weave each way, i. e., four multiples of each weave for each effect of the checker-board; the complete weave repeating on 24 warp threads × 24 picks, and which calls for a 12 harness section draw on the loom.

Weave Fig. 10 shows us the checker-board satin having for its foundation the 8 leaf satin filling effect to alternate with the 8 leaf satin warp effect, using again two repeats of the weave, each way, i. e., four multiples of it for each check of the new combination weave; the latter calling for its repeat for 32 × 32, and for its execution on the loom for 16 harness.

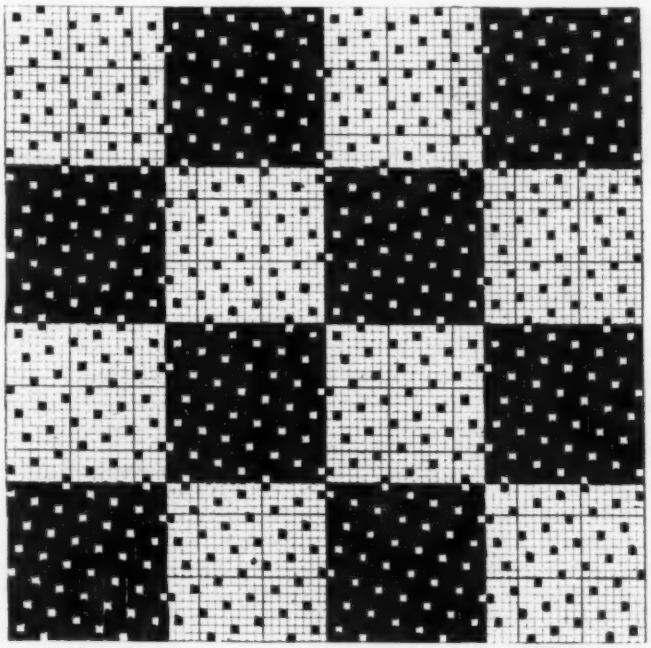


Fig. 11

Weave Fig. 11 in turn shows us the plain checker-board satin, having for its foundation 20 warp threads and 20 picks of the 10 leaf satin warp effect, to alternate (both ways) in the fabric structure with 12 warp threads and 12 picks of the filling satin weave, the complete weave repeating on 40 × 40, and calls for a 20 harness section draw for its execution on the loom.

(To be continued.)

Seventy-six per cent. of the cotton operatives of Great Britain work in Lancashire.

CONDITIONING WOOL FOR CARDING.

(Continued from January.)

Possibly the best known, anyway the most extensively used and satisfactory special brand of a wool oil in use in connection with our woolen mills, is the one known as Breton oil, a saponified oil which mixed with red oil gives a smooth, milky emulsion. Its base being red oil, it consequently possesses the so desirable features of assisting the fulling and scouring processes of goods made out of yarns lubricated with this Breton oil, besides putting wool in perfect condition for good carding and spinning.

Mineral oil as lubricant is more or less out of question. Although it is in no way influenced by oxygen, and does not become resinous, causing spontaneous combustion, as other oils do, for instance cotton seed oil, which is little suited as a wool lubricant, it does not saponify, an objection that overbalances all its other advantages.

The percentage of the lubricant is governed by the character and cleanliness of the wool, and varies from 10 to 16 per cent., taken in proportion to the weight of wool to be oiled. In order to distribute the oil more equally and to make it more effective, it is mixed with a certain quantity of water, from 20 to 30 per cent. of boiling water, taken also in proportion to the weight of wool to be oiled, the proportion to use being determined by the dryness and fineness of the staple. The combination of the two fluids may be effected by an addition of a little soda or still better, a little ammonia. The alkali also effects another purpose; namely, a more thorough saponification in washing. A good method for testing wool oils, as to whether they are adulterated or a good lubricant is given thus: Stir up a portion of the oil with forty parts of a solution of carbonate of soda of 3° B. If the oil forms a milky emulsion, without any oil drops on the surface, it then is a good lubricant for wool fibres.

The wool, after having been freed from dust and dirt, is next passed once through the wool picker, so as to open and at the same time mix the lot of wool under operation, which then is laid in layers and the well stirred lubricant then poured over the layers of wool, which are then beaten with sticks, to expedite the distribution and penetration of the lubricant. Layers being added upon layers, each with its additional oiling and beating process until the lot to be mixed or picked is used up, after which the pile—breaking into it straight down—is fed to the mixing, i. e., wool picker, giving the lot afterwards an additional run through the wool picker for a still better mixing, as well as a most uniform division of the lubricant used.

In the blending of mixtures every lot of the same color should be picked previously. It is especially advisable to repeat the picking process for filling yarn, not only for mixtures, but also for uni-colored goods material, since by this means an unequal distribution of the several kinds of wool in the yarn and the resulting cockling of the cloth will be avoided.

Lubricating the wool in the thus described manner is somewhat primitive, still it is in use in many mills, and if conscientiously performed, is effective in securing a uniform distribution of the lubricant, but the operation must be performed by reliable workmen.

However, the adoption of the Bramwell self feeder on mixing-pickers, thus securing even and continuous feeding, has made possible the adoption of another improvement in the picker room, which is being rapidly adopted in all up-to-date woolen mills. Until recently the regular method of oiling the stock as previously referred to was by spreading it on the floor and then sprinkling the oil over it by hand with a watering can. This method is crude, wasteful and frequently gives unsatisfactory results, some parts of the stock receiving no oil, some too much; again oil was wasted by sprinkling on the floor and the walls of the picker room and considered all around, the whole process is wasteful of labor and oil. Since evenness in feeding has been secured by the use of the Bramwell picker feed, economical and perfect oiling of the stock is done best by attaching to the wool picker, or mixing picker, or fear-naught as they are called, the Spencer automatic oiler. The machine,

which is bolted to the sides of the picker feed apron, is simple and effective, consisting principally of a revolving brush on which the oil or emulsion is dropped by a vibrating pipe which leads from a small tank at the top of the machine. The brush strikes against a metal blade and thus converts the oil or emulsion into a spray, which is thrown evenly on the wool as it passes over the picker feed apron from the feeder to the picker. It thus penetrates the stock thoroughly and reaches the individual fibres effectively and with a perfect uniformity.

As will be readily understood, the forward motion of the material, and the quantity of the oil sprayed by the brush, can be regulated at will by the operator of the machine.

As mentioned once before, it is not advisable to oil and pick too large a lot at once, with reference to one set of cards, i. e., taking one set into consideration, so that it will not lie too long before it is worked on the carding engine, for the fact that otherwise the lubricant will draw away from some parts of the wool and settle in others, while other portions of such a large lot, and more so if picked ahead and laying idle, being exposed to the air and the influence of temperature, will dry more or less. Again, oiled wool is inclined to become gummy by continued storing, in turn making carding and spinning more or less difficult. Again, finally the fibre gets unnecessarily softened and the evils previously referred to with reference to wet wool may appear. Provided oiled and picked wool is left over, for one reason or the other, and has to lay for several days before it can be used, be sure you store it in a cool, dry place.

A NEW LOOM PICKER.

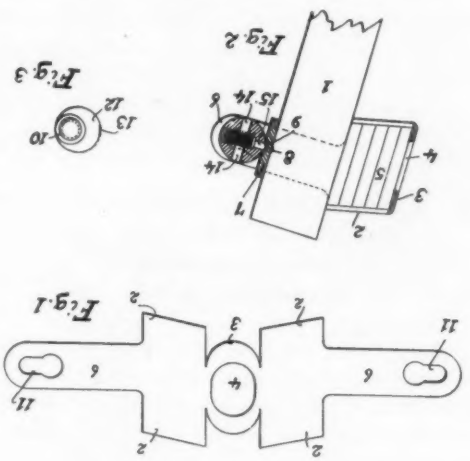
The new device, besides being of little cost in its construction is very readily adjusted and set and at the same time is so constructed that the set screw arrangement for clamping the head upon the stick is done away with.

Referring to the accompanying illustrations, Fig. 1 shows us the picker shell to be of a single piece of metal, cut out in the shape illustrated, which in turn is bent and folded into the desired shape.

Fig. 2 is a section view of a side elevation, showing the new picker attached in its position to the picker stick.

Fig. 3 illustrates the locking device for attaching and clamping the picker to the stick.

Numerals of reference accompanying illustrations, indicate thus: 1 the picker stick, 2 the picker shell, consisting of a head 3 which in turn is provided with a hole 4 through which the point of the shuttle enters. The space formed by the shell, i. e., between the head 3 and the picker stick 1 is packed with layers of leather or other suitable material, serving as a buffer for the shuttle. The leather is of a uniform thickness, this being permissible on account of



the head, 3 being parallel to the stick 1 and thus allows one layer of leather, 5, to fit in any place occupied by another layer; consequently when the front layer is worn by the point of the shuttle, the one next to it can be moved forward, etc., hence by pulling the tail pieces, 6, of the picker apart worn leather strips can be readily removed and fresh ones inserted at little expense to the mill.

Seven is a thrust block, having a raised portion, 8, on the side adjacent to the pickerstick, and on the opposite side a depression, 9, said block also being provided with ears, which in turn engage the edges of the tail pieces, 6, and thus hold the block in position.

The locking device (see Fig. 3) is cam shaped and is provided with ears, 10, said

ears in turn locking in slots, 11, the locking device being further provided with an eccentrically-arranged central position, 12, which in turn has a flat surface, 13, for the purpose of giving a continually-increasing pressure as the locking device is turned into its locked position; the locking device at the same time pressing the thrust block, 7, firmly against the stick 1, thus forcing the raised portion, 8, into the wood of the picker-stick and which in turn holds the device in its desired position on the stick. The locking of the picker to its stick is accomplished by means of inserting a turning key into the opening, 14, or if so desired, such a key can be permanently mounted in the opening, 14.

Besides the locking means thus referred to, an additional device (which can be added) is shown in Fig. 2, the same consisting of a spring pressed pin, 15, which is forced into the depression, 9, of the thrust block when the said block is in a locked position.

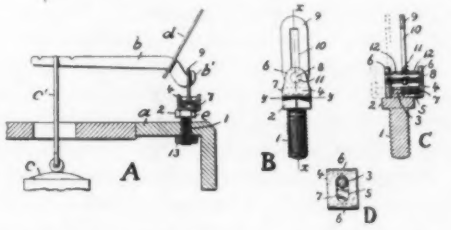
AN ADJUSTABLE FULCRUM FOR THE WEIGHT LEVERS FOR THE TOP ROLL SADDLES OF SPINNING FRAMES.

The object of this improvement to the fulcrum of top roll saddles for ring spinning-frames is to provide an adjustable fulcrum for each weight- lever in the machine, whereby the weights can be readily adjusted vertically and the stirrup straps (as hold weight levers in position in the machine) adjusted forwardly or rearwardly, as the case may require, the thus adjustable fulcrum being locked in turn in its adjusted position by means of a lock-nut provided to each fulcrum.

In order to be able to explain the construction and action of this adjustable fulcrum, the accompanying four illustrations are given, and of which Diagram A is a sectional view of those parts of a spinning-frame to which this adjustable weight lever fulcrum more particularly refers, the latter being shown in connection with it. Diagram B is an enlarged (compared to diagram A) view of the adjustable fulcrum removed from the front rail of the spinning-frame. Diagram C is a vertical sectional view of the fulcrum, taken on line x—x of Diagram B showing the yoke and link in the extreme forward position in full lines and in the extreme rearward position in broken lines. Diagram D is a transverse sectional view taken on line y—y of Diagram B, looking at the under side of the yoke.

Examining illustrations, and more particularly in this case diagram Fig. A, we find the front rail of the spinning frame indicated by letter of reference a; the weight lever by b, its hook shaped fulcrum end by b′; the weight (its upper portion only being shown) by c, its connecting wire by c′; the stirrup strap as holding the lever b movable to the top roll saddle (not shown) by d, and finally the new adjustable fulcrum for lever b by letter of reference e.

The latter, and which is the only novelty,



the other parts referred to having been in use in connection with spinning frames for a long time, consists of a screw-threaded stem 1, having a polygonal head 2, extending in the central stud 3, a yoke 4 being provided having a slot 5 in its base for the stud 3 and the upwardly-extending arms 6. A cam-disk 7 is secured off center to the stud 3 in the yoke 4 by riveting the end of the stud 3 through a hole in the disk 7, a cross-pin 8 extending through the arms 6 of the yoke 4, being secured in position by riveting its ends in the arms 6.

Link 9 has the customary long slot 10, for holding the hook-shaped fulcrum end b′ being provided at its bottom with a hole 11 of lever, b, being provided at its bottom with a hole 11 for its pivotal connection to pin 8, which is provided with sleeves 12 intermediate, the arms 6 and link 9 in order to hold the latter centrally on pin 8. 13 shows us the lock-nut, already previously mentioned, for locking the device in position onto the

front rail, a, of the spinning frame, as shown in conection with diagram A.

Having given until now a description of the construction of the new adjustable fulcrum, we will in turn explain its working, i. e., its adjustment: In inserting the adjustable fulcrum to the frame, its stem 1 is screwed through a hole in the front rail a in a position to permit the hook-shaped end b′ of the weight-lever b to enter the slot 10 in the link 9 of the fulcrum, as clearly shown in connection with diagram Fig. A. The weight c is then adjusted vertically by turning the stem 1, i. e., raise or lower it in the front rail a. The stirrup-strap d in turn is adjusted forwardly or rearwardly between the drawing-rolls (not shown) by turning the stem 1, what through the cam-disk 7, acting on the arms 6 of the yoke 4, moves said yoke 4 and the link 9 into the extreme forward position, as shown in full lines in diagram Fig. 3, or into the extreme rearward position, as shown in broken lines in diagram Fig. 3, or into any immediate position and locked in the adjusted position by tightening the lock-nut 13. These movements of the link 9 move the weight-lever b and with it the stirrup-strap d, however, a half-revolution or less of the stem 1 will not appreciably influence the position of the weight c.

AN IMPROVED TEMPLE.

The advantages of the new temple are: Increased strength and rigidness, as well as less expensive to manufacture.

To provide on the loom for more space between the two temples, in order to give more width for cloth to be woven, being at the same time constructed in such a simple way that the temple can be adjusted or replaced, as the case may require by the weaver.

To more fully understand the working construction of the new temple, the accompanying illustrations are given, and of which Fig. 1 shows said temple in its side elevation, Fig. 2 being a detail illustration showing the arrangement of the stand and shank in relation to one another, i. e., the characteristic dovetail connection between said parts.

In these illustrations, letters of reference indicate thus: A shows us the cap; B the pod; C the heel; D, E, and F the shank; G H, I the stand; J the plate; and K the spiral spring. The pod, heel, plate and spring are of usual construction, as met with in connection with temples, however, the shank D, E, F is different, it being in this case one solid casting, rounded below the collar E. Above this collar, it is wedge-shape up to the point indicated by L, and from where and up to its end portion it is square and tapering

The stand G, H, I consists of a slotted plate, provided with a collar having a cir-

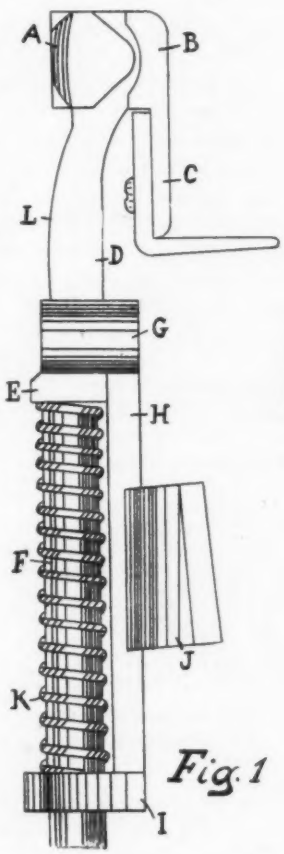


Fig. 1

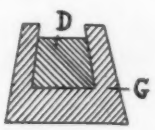


Fig. 2

cular hole, through which the rounded shank passes at the point I. At G, said stand consists of two projections to the front, (see Fig. 2 more in particular), between which the wedge shaped shank is tightly dovetailed, and held securely and rigidly, while at the same time rendering the temple solid, allowing no play between the different parts, thus keeping the cloth most uniformly in line with the dents of the reed, what in turn will pre-

vent breakages of yarn as well as cutting into the race-board of the lay.

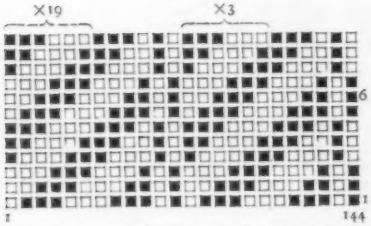
It will be readily seen by the reader that by the construction of this temple as thus described, the latter can be easily withdrawn from its stand, without removing the latter from the loom, by merely pushing the shank down in its stand until the point L reaches the projections at G, and when the shank then will easily come out, and thus prevent the temple from being a hindrance to the weaver in his work when having to pick-out, etc.

The temple is of little expense on account of it being a plain casting, without holes drilled or tapped, consequently requiring little if any finish necessary.

The slot in the stand has a two fold object: It does away with any large allowance on the inside of the temple for fastening the same to its plate, consequently providing for a greater width of cloth to be handled between the temples, and also does away with the manufacture of right and left hand temples, the new temple answering for both purposes.

FOREIGN NOVELTIES.

Worsted Suiting.



Complete Weave. Repeat 144×6.

Warp—4320 ends, 6 or 12 harness, fancy draw.

Reed—20½ × 3 = 70¼ inches wide in loom.

Dress—

6 ends, 2/26s worsted, black 12 ends, 2/26s worsted, dark blue	× 2 = 36 ends
6 ends, 2/26s worsted, black	= 6 ends
45 ends, 2/26s worsted, dark blue	= 45 ends
1 end, 2/52s worsted, green 2 ends, 2/26s worsted, dark blue 1 end, 2/26s worsted, light blue 2 ends, 2/26s worsted, dark blue	× 2 = 12 ends
1 end, 2/52s worsted, green	= 1 end
44 ends, 2/26s worsted, dark blue	= 44 ends

Repeat of pattern: 144 ends

Filling—50 picks per inch, arranged thus:

6 picks, 2/26s worsted, black.
12 picks, 2/26s worsted, dark blue.

18 picks, repeat of pattern.

Finish—Worsted finish, 56 inches wide.

Woolen Cheviot Suiting.

Complete Weave. Repeat 52×4.

Warp—2050 ends, 8 harness, fancy draw.

Reed—14@ { 2 ends @ 3 ends / 10 ends @ 2 ends } =65 " wide in loom.

Dress—

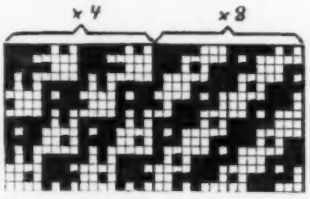
2 ends, 2/45s worsted, black, twisted over with 2/80s white mercerized cotton	=2 ends
3 ends, 2 ply, 5 run, woolen yarn, light gray	=3 ends
2 ends, 2 ply, 6 run, woolen yarn, gray and white	=2 ends
2 ends, 2 ply, 5 run, woolen yarn, light gray	=2 ends
2 ends, 2 ply, 6 run, woolen yarn, gray and white	=2 ends
2 ends, 2 ply, 5 run, woolen yarn, dark gray	=2 ends
4 ends, 2 ply, 6 run, woolen yarn, gray and white	=4 ends
4 ends, 2 ply, 5 run, woolen yarn, light gray	=4 ends
2 ends, 2 ply, 6 run, woolen yarn, gray and white	=2 ends
1 end, 2 ply, 5 run, woolen yarn, dark gray	=1 end
2 ends, 2/43s worsted, black, twisted over with 2/80s white mercerized cotton	=2 ends

Repeat of pattern: 26 ends

Filling—39 picks per inch, all 2/24s worsted cheviot yarn, black.

Finish—Cheviot finish, scour well, clip on shear, steam, press, 56 inches wide.

Worsted Suiting.



Complete Weave. Repeat 192×16.

Warp—7680 ends, 16 harness, fancy draw.

Reed—15×8=64 inches wide in loom.

Dress—

8 ends, 2/64s worsted, light gray and slate twist 8 ends, 2/56s worsted, black	× 3 = 48 ends
8 ends, 2/64s worsted, light gray and slate twist	=8 ends
2 ends, 2/56s worsted, black	=2 ends
4 ends, 2/64s worsted, violet	=4 ends
2 ends, 2/56s worsted, black	=2 ends
2 ends, 2/56s worsted, black and slate twist 6 ends, 2/64s worsted, light gray and slate twist 8 ends, 2/56s worsted, black	× 8 = 128 ends

Repeat of pattern: 192 ends

Filling—98 picks per inch, arranged thus:

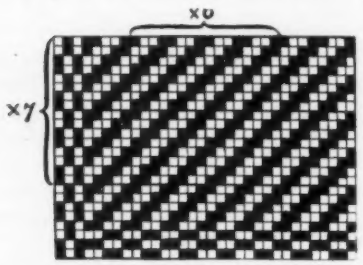
8 picks, 2/64s worsted, light gray and slate twist
8 picks, 2/56s worsted, black.

16 picks, in repeat of pattern.

Finish—Worsted finish, 56 inches wide.

Worsted Melton Suiting.

Complete Weave. Repeat 112×120.



Warp—3960 ends, 14 harness, fancy draw.

Reed—14×4=70 inches wide in loom.

Dress—

51 ends, 2/42s worsted, brown mix.
1 end, 2/60s worsted, yellow brown.
11 ends, 2/42s worsted, brown mix.
1 end, 2/60s worsted, blue.
48 ends, 2/42s worsted, brown mix.

112 ends, repeat of pattern.

Filling—67 picks per inch, arranged thus:

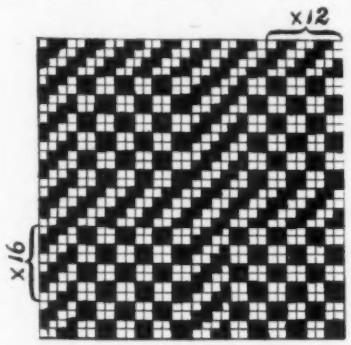
55 picks, 2/42s worsted, brown mix.
1 pick, 2/60s worsted, yellow brown.
11 picks, 2/42s worsted, brown mix.
1 pick, 2/60s worsted, blue.
52 picks, 2/42s worsted, brown mix.

120 picks, repeat of pattern.

Finish—Worsted melton finish, scour well, full slightly, clip on shear, press, 56 inches wide.

Worsted Suiting.

Complete Weave. Repeat 120×152.



Warp—3280 ends, 10 harness, fancy draw.

Reed—25×2=66 inches wide in loom.

Dress—

8 ends, 2/26s worsted, black ..... = 8 ends
4 ends, 2/40s worsted, black and blue-green ..... = 4 ends
40 ends, 2/26s worsted, black ..... = 40 ends
6 ends, 2/40s worsted, black and blue-green.... } × 3 = 48 ends
10 ends, 2/26s worsted, black ..... }
20 ends, 2/26s worsted, black ..... = 20 ends

Repeat of pattern: 120 ends

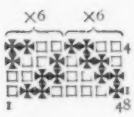
Filling—52 picks per inch, arranged thus

48 picks, 2/26s worsted, black ..... = 48 picks
6 picks, 2/40s worsted, black and blue-green.... } × 3 = 48 picks
10 picks, 2/26s worsted, black ..... }
44 picks, 2/26s worsted, black ..... = 44 picks
4 picks, 2/40s worsted, black and blue-green. ..... = 4 picks
8 picks, 2/26s worsted, black ..... = 8 picks

Repeat of pattern: 152 picks

Finish—Worsted finish, 56 inches wide.

Cheviot Suiting.



Complete Weave.

Repeat 48×4.

Warp—2880 ends, 4 harness, fancy draw.

Reed—20½ × 2 = 70 inches wide in loom.

Dress—

1 end, 4 run, woolen yarn, white .....
1 end, 2 ply, 8 run, woolen yarn, white and green mix twist ..... } × 3 = 6 ends
1 end, 4 run, woolen yarn, gray mixed ..... = 1 end
3 ends, 2 ply, 8 run, woolen yarn, black and yellow twist = 3 ends
1 end, 4 run, woolen yarn, green ..... = 1 end
1 end, 2ply, 8 run, woolen yarn, white and green mix twist ..... = 1 end
1 end, 4 run, woolen yarn, white.....
1 end, 2 ply, 8 run, woolen yarn, white and green mix twist..... } × 3 = 6 ends
1 end, 4 run, woolen yarn, green ..... = 1 end
3 ends, 2 ply, 8 run, woolen yarn, black and yellow twist = 3 ends
1 end, 4 run, woolen yarn, gray mixed ..... = 1 end
1 end, 2 ply, 8 run, woolen yarn, white and green mix twist } × 3 = 6 ends
1 end, 4 run, woolen yarn, white }
1 end, 2 ply, 8 run woolen yarn, white and green mix twist. } × 3 = 6 ends
1 end, 4 run, woolen yarn, gray mixed ..... } × 2 = 24 ends
1 end, 2 ply, 8 run, woolen yarn, white and green mix twist ..... } × 3 = 6 ends
1 end, 4 run, woolen yarn, white.....
1 end, 2 ply, 8 run, woolen yarn, white and green mix twist ..... = 1 end
1 end, 4 run, woolen yarn, olive ..... = 1 end
1 end, 2 ply, 8 run, woolen yarn, white and green mix twist ..... = 1 end
1 end, 4 run, woolen yarn, gray mixed ..... = 1 end
1 end, 2 ply, 8 run, woolen yarn, white and green mix twist ..... = 1 end
1 end, 4 run, woolen yarn, olive ..... = 1 end
1 end, 2 fold, 2/36s worsted, orange and black twist .... = 1 end
1 end, 4 run, woolen yarn, white .....
1 end, 2 ply, 8 run, woolen yarn, white and green mix twist..... } × 2 = 4 ends
1 end, 4 run, woolen yarn, white..... = 1 end
1 end, 2 fold, 2/36s worsted, orange and black twist.... = 1 end
1 end, 4 run, woolen yarn, olive ..... = 1 end
1 end, 2 ply, 8 run, woolen yarn, white and green mix twist ..... = 1 end
1 end, 4 run, woolen yarn, gray mix ..... = 1 end
1 end, 2 ply, 8 run, woolen yarn, white and green mix twist ..... = 1 end
1 end, 4 run, woolen yarn, olive ..... = 1 end
1 end, 2 ply, 8 run, woolen yarn, white and green mix twist ..... = 1 end
1 end, 4 run, woolen yarn, white }
1 end, 2 ply, 8 run woolen yarn, white and green mix twist. } × 3 = 6 ends
1 end, 4 run, woolen yarn, gray mix ..... } × 2 = 24 ends
1 end, 2 ply, 8 run, woolen yarn, white and green mix twist } × 3 = 6 ends }

Repeat of pattern: 96 ends

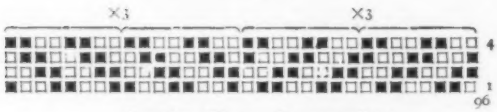
Filling—40 picks per inch, arranged thus:

1 pick, 2 ply, 8 run, woolen yarn, dark gray and black twist ..... } × 4 = 8 picks
1 pick, 4 run, woolen yarn, black.....
8 picks, 4 run, woolen yarn, black ..... = 8 picks

Repeat of pattern: 16 picks

Finish—Cheviot finish; 56 inches wide.

Woolen Cheviot Suiting.



Complete Weave—Repeat 96×4.

Warp—2112 ends, 8 harness, fancy draw.

Reed—15×2=70½ inches wide in loom.

Dress—

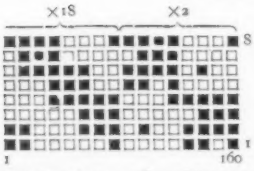
1 end, 5 run, woolen cheviot, light green
42 ends, 3 run, woolen cheviot brown gray mixed.
1 end, 2/64s worsted, yellow and green twist, twisted over with single 32s, black worsted.
1 end, 2/32s worsted, yellow and black twist.
2 ends, 3 run, woolen cheviot, brown gray mix.
2 ends, 2/64s worsted, red and yellow twist, twisted over with single 32s black worsted.
2 ends, 3 run, woolen cheviot, brown gray mix.
1 end, 2/32s worsted, yellow and black twist.
1 end, 2/64s worsted, yellow and green twist, twisted over with single 32s black worsted.
42 ends, woolen cheviot, brown gray mix.
1 end, 5 run, woolen cheviot, light green.

96 ends, repeat of pattern.

Filling—30 picks per inch, all plain 3 run black.

Finish—Woolen cheviot finish; 56 inches wide.

Worsted Suiting.



Complete Weave.
Repeat 160 × 8.

Warp—6400 ends, 16 harness, fancy draw.

Reed—23×4=69½ inches wide in loom.

Dress—

24 ends, 2/48s worsted, Scotch green ..... =24 ends
16 ends, 2/48s worsted, black ..... =16 ends
24 ends, 2/48s worsted, Scotch green ..... =24 ends
2 ends, 2/48s worsted, black
2 ends, 2/64s worsted, black and blue twist. } × 3 = 12 ends
4 ends, 2/48s worsted, black ..... = 4 ends
24 ends, 2/48s worsted, Scotch green
16 ends, 2/48s worsted, black } × 3 = 120 ends
24 ends, 2/48s worsted, Scotch green ..... =24 ends
2 ends, 2/48s worsted, black
2 ends, 2/64s worsted, dark red brown } × 3 = 12 ends
4 ends, 2/48s worsted, black ..... = 4 ends
24 ends, 2/48s worsted, Scotch green
16 ends, 24/8s worsted, black } × 2 = 80 ends

Repeat of pattern: 320 ends

Filling—85 picks per inch, all 2/48s worsted black.

Finish—Worsted finish, 56 inches wide.

Worsted Melton Suiting.

Complete Weave.—Repeat 40×4.

Warp—2640 ends, 8 harness, fancy draw, all 2/36s worsted cheviot yarn.

Reed—19½×2=67½ inches wide in loom.

Dress—

10 ends, draband brown mix twist
1 end, drab and brown mix twist
1 end, dark brown } × 5
10 ends, drab and brown mix twist
1 end, drab and brown mix twist
1 end, dark blue mix } × 5 } × 2 = 80 ends
10 ends, drab and brown mix twist ..... = 10 ends
1 end, drab and brown mix twist.
1 end, dark brown } × 5 = 10 ends
10 ends, drab and brown mix twist ..... = 10 ends
1 end, red brown ..... = 1 end
2 ends, drab and brown mix twist ..... = 2 ends
4 ends, dark blue mix ..... = 4 ends
2 ends, drab and brown mix twist ..... = 2 ends
1 end, red brown ..... = 1 end

Repeat of pattern: 120 ends

Filling—40 picks per inch, use same arrangement, colors and counts as in warp.

Finish—Worsted cheviot finish; 56 inches wide.

TO FIX THE LUSTRE PRODUCED BY THE SCHREINER FINISH ON PIECE DYED GOODS.

Certain piece-dyed fabrics, in order to give them a silk-like lustre, are passed between rollers engraved with fine parallel lines. The lustre thus produced, however, has been found to be always more or less fugitive, i. e., becomes lost when the goods are exposed to a moist atmosphere, to rain, or to the goose of the tailor when made up into garments. Efforts have been continually made to render this finish thus referred to, permanent, for example, by treating the goods with different solutions of nitrocellulose; but this with little success, chiefly on account of the character of the solvents employed.

Some of these solvents employed, on account of the moisture present in the fabrics, in turn caused the nitrocellulose to be deposited in an opaque instead of a transparent form, in turn changing the appearance of the goods, whereas others were found to be highly inflammable and explosive when their vapors were mixed with air; again others were found to act as anesthetics, and consequently are dangerous to the health of the workman. The use of other solvents, it was found, in turn imparted to the goods thus treated a disagreeable odor, while again others have too high and others too low a boiling point to render their use easy.

After a long series of experiments, Mr. P. Krais lately discovered a solvent "amyl formate," which is the formic-acid ether of isoamyl alcohol, and which is free from all

of the previously referred to objections, and which invention he in turn assigned to the Bradford (Eng.) Dyers' Association.

The use of this solvent is free from danger, it does not render the nitrocellulose opaque, and it has a comparatively high but at the same time, not too high a boiling-point (about 255° F.). The solution also is very fluid, and consequently it is possible to produce extremely thin films or coatings on the fibres of the fabric, which is a matter of great importance.

A five per cent. solution has been found to be suitable, and which in turn is applied twice in succession to the fabric by spraying, the solvent being evaporated after each application; however, care must be taken that the resulting coating does not form a complete skin, nor waterproof the fabric, but be merely just sufficient to fix the mechanically-produced lustre finish on the fabric by passing the same between the finely engraved rollers previously referred to.

THE FINISHING OF COTTON GOODS.

(Continued from January.)

Bleaching. This process, like all the rest practiced with reference to textile manufacturing has undergone immense modifications since it began to be practiced with reference to the textile industry. In the 17th century the Dutch were known as the most skilled bleachers in the world, however their method of bleaching necessitated the treatment of the goods all the way from 4 to 7 months. They used buttermilk or bran for souring the goods, an operation which then took from 2 to 6 weeks, a feature which at present by means of hydrochloric and sulphuric acids only takes a few hours. Then they treated the goods by pouring boiling lye (a combination of lime and soda ash) on them, subjecting them afterwards to a trampling process, which again took from 8 to 10 days, whereas our modern substitute effects the same process in the same number of hours as it then took days.

In a similar way the old fashioned grassing and watering process which took several months, is at present accomplished by means of chloride of lime within a few hours.

Until the end of the 17th century, bleachers then only worked from March to October, the remaining part of the year being considered not suitable for the process.

The combination of lime and potash in the process, we are informed, was first used about 1770, that of chloride of lime in 1790, and the use of resin with soda ash about 100 years ago.

Bleaching as now practiced in connection with cotton goods has for its object the whitening of the fibres by chemical means, vice versa, the merely mechanical or solvent whitening effected by the use of soap, water and the various solvents.

Cotton contains any amount of impurities, mechanical and otherwise, again the yarns accumulate dirt and impurities of all kinds during the process technically comprised as cotton spinning. In the same manner, warping and weaving will add to these impurities, in fact while weaving a piece of cotton cloth, it is practically impossible to keep it clean and free from dirt, etc.

Bleaching is done for two purposes, one being found in the immense consumption of white cotton goods and where a clean, white shade is required, the other reason being that goods before dyeing medium and light shades must be scoured and bleached in order to be able to produce a perfectly level and uniform shade on the goods, free from dark spots or light patches.

Another reason is that some of the cotton fibres, more particularly Egyptian cotton, contain a quantity of brown coloring matter in the fibre, and which would prevent the dyeing of such cotton in any pale bright shades, for which reason it becomes necessary to remove this color in the cotton and in turn render the latter by means of bleaching quite bright.

If goods are intended for dark colors, like blacks, browns, dark blues, etc., the bleaching operation may be omitted, using in this instance simply a scouring by subjecting the goods at boiling to a soda or caustic soda bath, a process frequently done in the same machine where afterwards dyeing is done. Fig. 5 shows such a dyeing machine, technically known as a dye jig, the same consisting of a wooden tank, a, upon which are mounted two rolls b and c, located sufficiently apart from each other so that the dye-

hand can readily observe the correct running of the cloth. A reel of cloth, d or e, is then placed on the surface of one or the other of the rolls, b or c, and thus made to revolve by frictional contact. f indicates the cloth as drawn by the construction and operation of this jig back and forth from roll b to roll c and vice versa, being guided in this travel, through the scouring liquor, g, by small rolls h, i and j, as often as may be required in order to thoroughly scour the fabric from its impurities. k and l are guide rolls.

Motion to the machine, i. e., to rolls b or c,

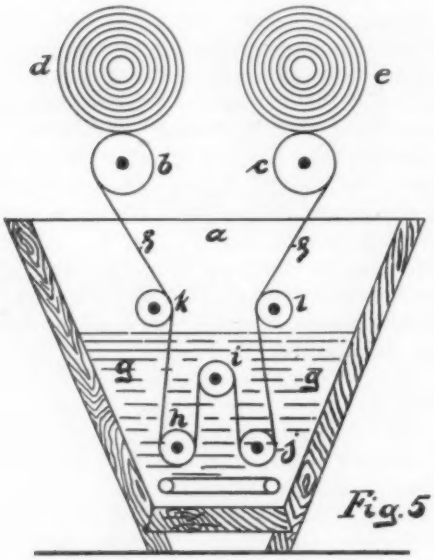


Fig. 5

is imparted to it by means of line shaft mitre gear and clutches.

The scouring liquor, g, is made from soda or caustic soda, and the pieces run from end to end while the liquor is being heated to the boil, and which as a rule will require an hour or less, after which the alkali liquor is run out, clean water run into the tank and the fabrics washed, after which the dirty water is again drawn off and clean water run in the jigger, and the dyes, etc., run in to the tank, and when the dyeing then is done in a similar manner as thus explained with the scouring.

From 2 to 3 lbs. of caustic soda, or from 3 to 4 lbs. of soda for each 100 lbs. of gray goods submitted is a fair average of chemicals to use for the process. As will be readily understood, in place of the jig thus explained, an ordinary bleacher's kier can be used.

We now will come back to cotton bleaching as required in connection with white goods as well as colored goods of such shades and colors where the process must be practiced in order to be able to produce the required shade or color.

Cotton bleaching consists in the isolation of the pure cellulose, as composing the bulk of the cotton fibre, from its by-products, and the destruction of the latter as completely as possible, which destruction can be caused by oxidation or by the action of chlorine which withdraws the nitrogenous from the other materials much more readily than from cellulose.

The substances to be removed in cotton bleaching are usually as follows:

Starch and size from the warp.

Dust and particles of iron from the machinery.

Oil from the operator's hands and the machinery.

Fats and gums from the cotton fibre.

Nitrogenous matter from the cotton fibre, and

Woody matter from the cotton fibre.

The method observed in bleaching the fabric depends considerably on the structure under operation, since it will be readily understood by the reader that the fabrics like lace curtains etc., cannot be handled in the same way, cannot be treated as roughly as for example, a piece of heavy calico; again it depends whether the goods refer to white goods or whether they have to be dyed or printed, and for which reason it is customary to subdivide bleaching into market or white bleaching, dyer's or printer's bleaching and finally into what is known as madder bleaching, the last being the most particular process, requiring the greatest of care on the part of the operator, and comprises: stitching, singeing, washing, lime boil, lime sour, lye boil, resin boil, wash, chloring or chemicking and white sour. The other two methods of bleaching previously referred to, require less processes of those quoted and for which reason when explaining the latter

bleaching we at the same time treat the others.

When the pieces of cloth are received from the loom and taken into the gray room, they should be sorted, counted and examined, and while this is going on, each piece should be stamped by means of gas tar with a separate mark. The pieces of one lot are then stitched together in a long length of cloth by means of a machine known as "Railway Sewing and Rolling Machine," and in which the cloth from the loom is placed in its cradle in front of the machine and the ends stitched together as fast as it is unrolled from the loom bolt, after which as many pieces as desired are rolled up in large roll, ready for singeing, shearing, etc., or for the bleachery direct in connection with common goods.

This sewing machine thus referred to is built by the Curtis and Marble Machine Co., Worcester, Mass., and on account of the ingenuity of the machine a short description of its action and operation will be of interest to the reader.

Before being sewed, the cloth is drawn out to its full width, and held smooth and straight by steel pins on the machine. The sewing machine head then travels across it (the cloth remaining stationary), and sews the ends together with a continuous chain stitch, making a perfectly straight and even seam all the way across. The sewing is done close to the ends, thus causing but little waste on headings; the stitches at the same time can be drawn out easily whenever desired. The machines are adjustable for different widths of cloth, and the sewing machine head stops automatically at the end of each seam. As soon as one sewing is finished, a small hand wheel is turned and the sewing machine head drawn back to the starting point, ready for the next seam; the operator controlling the stopping and starting of the machine by means of a foot treadle in front. The sewing machine used is a "Singer" head, which will run with a minimum amount of care and attention in keeping it in adjustment. The cloth cradle in front, for folding the cloth from the loom, takes in any size roll up to 18 inches diameter, and is made with wooden rolls in the bottom so as to lessen the amount of friction on the cloth in unrolling it from the loom bolt. By handling the goods on rolls in this way, they are kept clean and free from wrinkles, and put in good shape for the next process, may it be singeing, shearing, brushing or napping or any other process.

What is important in connection with stitching the ends of two pieces of cloth together is to get a firm uniform stitch, one which will lie level with the cloth without any knots projecting which might catch in the machinery through which the cloth in turn has to pass in this condition, and which in turn might lead to damage.

The next process most all cotton goods are subjected to is singeing, a process which has for its object to burn off the natural fuzz of the yarn (nap) from the face of the fabric, in order to enable a better finish to be given to the goods, and for which work different machines are used. It may be done either by passing the cloth over a red hot copper plate, or over a red hot revolving copper cylinder, or through a coke flame or through a gas flame. Lately a process of heating a platinum rod red hot by electricity has been mentioned, which process, however, very likely is still in its infancy.

Dividing singeing machines in practical use from their mechanical point of view, we can divide them into plate and gas singers, the style of machine to use varying with the goods under operation, closely woven flat goods being best adapted for the plate singers, whereas open goods and such as have raised figures are better adapted for gas singeing.

In former constructions, the plate singer was a machine containing one or more iron or copper plates heated by coal and held in place with heavy masonry or brick work, somewhat set like an ordinary steam boiler. This method however is objectionable for the fact that, first the setting or bricking up is very expensive, especially as to foundation, which must be always very heavy and substantial, and second, that on account of the excessive heat used in heating the plates to a red hot or almost melting point, the wear and tear on the brick work is very severe, the same continually cracking from expansion and contraction and in turn requiring

continual repair. A third disadvantage of this kind of singer being, that besides dirty work for the help, it at the same time constitutes expensive and troublesome work to keep the plates heated at the proper temperature with a coal fire, on account of the time taken to get the fire thoroughly going after first started, on account of the cold draughts that are let into the furnaces when they are opened up throughout the day, as they have to be, on account of the dust and dirt coming from the removing of the ashes.

The disadvantages thus quoted are overcome by the new singer as built by the Textile Finishing Machine Co., of Providence, R. I., and which they call their "Portable Oil Singer," the advantages of which are that the singer is self contained, has an iron frame work that supports both the iron fire boxes, lined with fire brick, and a carrier arrangement for conducting the cloth through the machine in order to bring it in contact with the plates. The construction of the machine being very light, renders but a small foundation necessary; again, it is so tied together and held, that the heat has little or no effect upon it. The plates are heated by a flame obtained from crude petroleum oil which in turn is atomized for combustion by either compressed air or steam, as may be preferred. The entire plant as furnished by the builders includes oil storage tanks, large enough to take a whole carload of oil at a time; a compressor if air is used to atomize, or a pump and attachments if steam is used.

The machine can be run to singe either both sides or one side only of the fabric, in one run of the latter through the machine, which is built to contain from one up to five plates, said plates being arranged horizontally in one or two rows, being respectively known as single or double deck machines. The arrangements for bringing the goods into more or less contact with the heated plates are also most complete in this portable oil singer, for which reason the closeness of the singeing operation can be regulated to a nicety.

The machine is usually driven by an independent engine, so that the speed, at which the goods pass through the machine, can be easily regulated. As the goods come from the machine, they pass through a water nip, so that all sparks are extinguished before damage is done.

One of these machines will handle far more goods in proportion to the number of plates than one with the plates heated by coal. The product of a three or five plate machine in ten hours being from 2000 to 2200 pieces of 50 yards each. The cost of heating the plates, while of course depending upon the relative cost of oil and coal, being, roughly speaking, about 60 per cent. that of coal.

With reference to the gas singeing machine, the purpose of this machine, similar to the singer previously explained, is to clear the face, or face and back of the cloth, as the case may require, from any fibres protruding from the structure by bringing the latter in contact with a gas flame; in turn giving the cloth a smooth appearance, clearly revealing the individual threads and their interlacings, i. e., bringing out the grain, so much required and sought for in many classes of fabrics; in other cloths, however, only a slight dressing (as in shearing) may be all that is required, and when consequently less powerful singeing is necessary. In its results singeing closely resembles shearing, only that the procedure is quicker.

After being singed, the fabric is run through a washing machine in order to remove by the water as much of the loose charred fibres as possible. Fig. 6 shows a specimen of such a washer, the same consisting of a pair of large wooden rolls, a b, set above a trough, c, containing water, d, and into which trough a constant stream of water flows. In this trough, c, is placed another wooden roller and the pieces of cloth are passed around this bottom roller and between the two top rollers several times in a spiral form in order to pass through the water in the trough, c, several times, which has for its advantage a more effectual washing of the fabrics under operation. The pressure of the roll a upon roll b, presses out any surplus water from the fabric. f indicates one of a series of wooden guide pegs fastened into a peg rail g, said guide pegs guiding the fabric in its spiral run around the rollers b and e. After passing between the last two

pegs of the series, the cloth is carried over a reel, h, out of the machine.

The goods are then packed in the kiers, milk of lime introduced, the goods boiled for from ten to fifteen hours without pressure. The quantity of lime necessary to do the work is really very small. It seems probable that the work done is performed partly by the lime in solution and partly by the lime in suspension. As slaked lime dissolves in boiling water only to the extent of about fifty grains to the gallon, very little will be required to give the solution. Three pounds of lime to one hundred of cotton is ample.

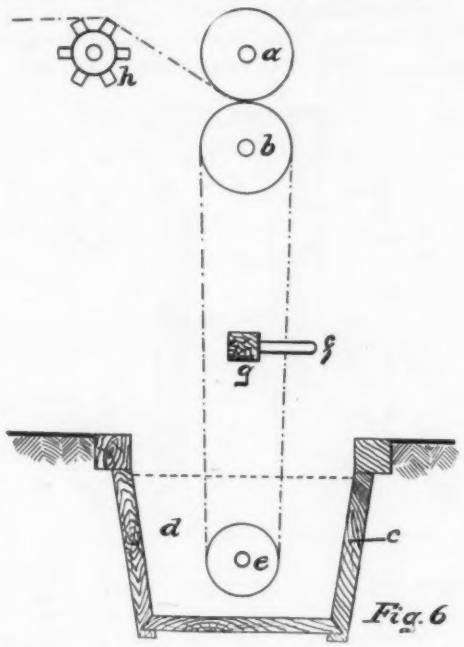


Fig. 6

The quantities used range from two to five pounds of lime. The lime saponifies the fats and gums, forming insoluble lime soaps which remain on the fibre. It also acts on the oils in the same manner so far as they are saponifiable. The lime water has also a powerful solvent action upon the sizes, which are removed by boiling water alone with some difficulty. The nitrogenous matters are attacked and the easily decomposible woody matters decomposed to a certain extent. The goods come from the lime boil still brown and after washing in a washer as previously explained in connection with diagram Fig. 6, then are passed on to the lime-sour for which sulphuric acid is almost always used.

The acid is diluted to 1 to 2 deg. Twaddle and the goods passed through. The lime is partly removed from goods, the lime soaps are broken up and the fatty acids left on the fibre. The mineral impurities also are largely removed by the sour. These mineral impurities are, to a certain extent, particles of soil which have not been removed by the beaters, and to a certain extent mineral matters naturally present in the fibre. The acid also acts on the iron dust which reaches the fabric from the machinery, during its manufacture, and removes it. Muriatic acid has some advantages over sulphuric acids, but the greater cheapness of the latter causes its use.

The next process is known as the lye-boil, and which perhaps is the most important operation in the whole process of bleaching, more particularly if the goods under operation are to be printed with alizarine colors, and where otherwise stains are liable to occur in the final stage. In its principle this process is very simple consisting in boiling the goods with a solution of soda ash or caustic soda, the amount to use varying in the various bleacheries according to the idea of the finisher.

For this boil, open kiers, or vacuum kiers, may be used, the latter having the advantage of causing a very perfect penetration of the cloth by the alkaline fluid. The object of the lye-boil is to remove the fatty acids precipitated upon the fibre by the decomposition of the lime soaps in the lime-sour, and also to destroy the gums and resins which have escaped the action of the lime. Only the best quality of soda ash should be used, and in the case of very refractory goods, the ash may be cauterized by the addition of an equivalent quantity of lime, which, however as a rule, is not necessary, since the ash dissolves the fatty acids readily. The quantity of ash used varies from 1 to 2 per cent. of the weight of the goods, any amount in excess of 2 per cent. being waste, four hours being about the average time for the boil required, although in some instances only three hours will be necessary, whereas in other cases up

to five hours may be required for this operation. The soda liquors may be used an indefinite number of times by drawing them into a tank and adding sufficient lime to precipitate the fatty acids, allowing to settle, and then using the liquid over again, after the addition of a small quantity of soda. The liquor will eventually become foul, but it can be used many times in this way.

(To be continued.)

A NOVEL DRYING MACHINE FOR YARNS AND FABRICS.

The objects aimed at in the construction of this machine, according to its inventor, F. E. Burlingame of Wrentham, Mass., are to provide a simple and inexpensive drying machine, which at the same time will handle a large quantity of material, besides being readily loaded and unloaded by the operator.

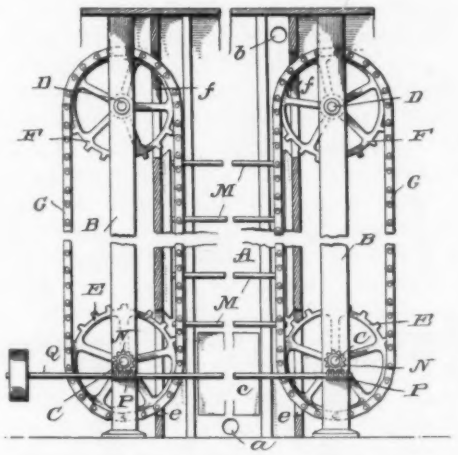
With reference to the accompanying illustration and which shows the new machine in its vertical section, A is the drying chamber proper, the same being provided at its bottom with the hot air inlet, a, and at its top with the exit, b, for the saturated air to escape. c is the door for the entrance and exit of the operator in loading and unloading the machine.

In the uprights, B, as extending from top to bottom of the machine, are secured shafts, C and D, carrying sprocket wheels, E and F respectively, said sprocket wheels extending through slots, e, f, partly into the drying chamber, A, each series of sprocket gears being respectively connected by means of a sprocket chain, G. Suitable stretches are mounted on the lower and upper sprocket gears, both in as well as outside the chamber, the inner stretches being arranged in upright guides. M are rods, removably arranged in horizontally-aligned links in opposed inner stretches of the sprocket chains, G, and which rods carry the cloth or yarns to be dried.

The lower situated shafts, C, also carry worm wheels, N, and which in turn gear with oppositely disposed worms, P, fast to a shaft, Q, by which arrangement it will be seen that when shaft, Q, is turned in one direction or the other, both sprocket chains, G, in turn will be moved one way or the other.

For unloading the machine, the operator enters the chamber, A, through the door, c, and places rods, M, bearing the material to be dried, in horizontally opposed open links in the inner stretches of opposed chains, after which the chains are moved by the mechanism previously described sufficiently higher (upwards) and when then another rod, bearing another load of material to be dried is placed in position, the operation being continued until the chamber, A, is filled, from bottom to top, with cloth or yarn, after which the operator leaves the chamber and enters hot air to the latter through the inlet, a, previously referred to.

When the drying process is completed, the operator again enters the chamber and re-



moves the lowermost situated rods, M, with their load, after which rod, Q, is turned in the opposite direction from before, bringing in turn the next rod, M, with its load of dried material within easy reach of the operator, for him to remove; the process of removing the series of rods, M, with their material, and turning between the time shaft, Q, being continued until all the dried material has been removed from the chamber, A.

From descriptions given, it will be readily understood that on account of the sprocket chains having stretches arranged within and without the chamber respectively, the capacity of the machine for holding material to be dried is considerable, the arrangement of but one stretch of each chain in the chamber

and adjacent to a wall thereof permitting the employment of long rods, M, each of which in consequence of it will permit a considerable amount of cloth or yarn to be deposited upon it.

WOOL AND HAIR.

To the practical man, wool and hair appear quite different though very likely he may not be able to express it in words, whereas to the scientist, they differ not in kind, but only in degree. Professor Owen gives the following definition: "Wool is a peculiar modification of hair, characterized by fine transverse or oblique lines from 2,000 to 4,000 in the extent of an inch, indicative of a minutely imbricated scaly surface, when viewed under the microscope, on which, and on its curved or twisted form, depends its remarkable felting property."

The difference in structure existing between wool and hair is one which is exceedingly difficult to define scientifically, although in the mill the difference is well known, the difference from a scientific point depending upon such slight modifications that it is very difficult to determine where true hair stops and true wool begins. The true difference does not consist, as sometimes stated, in the wavy or curly structure, as shall be characteristic only to wool, whereas hair shall be straight, for the fact that the curled locks of the negro certainly are true hair and not wool, whereas there are many cases in the lower animals where the structure of the fibre is minus the wave and yet that of a true wool.

Dr. Bowman, a scientific as well as practical authority on the subject of wool, states that all the wool-bearing animals have the tendency, when their cultivation is neglected, to produce hair rather than wool, in the same way that cultivated cotton, when neglected, reverts to the original type of wild cotton, the fibres losing their spiral character. This tendency also always manifests itself whenever the conditions of soil and climate are unfavorable to the fullest development of the animal, and many sheep and other allied animals, therefore, produce both wool and hair, the fine hair in many animals being very like wool and the coarse wool in others closely resembling hair, the true difference between wool and hair consisting in the method of attachment of the scales which form the external covering of the fibre; the general structural peculiarities which distinguish hair and wool from other appendages of the skin being the same both in wool and hair. Their formation is easily distinguished from that of feathers, horns, hoofs and nails, but as there are endless variations of the latter, so there is a great variation in the structure of the former.

Hair and wool have much in common. Their whole surface is covered over with a coating of fine notched scales, the free margins of which are always toward the point, and these upwardly projecting edges give rise to a series of waved transverse lines. The form of these scales is very diverse. Within this scaly covering is a fibrous substance which, in some specimens, forms nearly the whole of the stem, and in others is replaced by a substance of a more distinctly cellular structure, forming a medulla or pith. Upon the fibrous substance the firmness, strength and elasticity of the hair and wool depend. The medulla always occupies the centre of the shaft, but the diameter of this portion relative to that of the shaft varies very much in different specimens.

With reference to the difference between what we may term true hair and true wool, it will be noticed that in the hair the scales of the coating are firmly attached to the fibrous substance below, throughout the greater part of their length, and only reveal themselves when examined under the microscope as fine irregular transverse lines on the surface, and by a slight notching at the edge of the hair, when viewed by transmitted light. Along with this external structure there is, in true hair, usually associated an internal arrangement of the cells of the fibrous substance, in which there is a tolerably distinct medullary axis. The shaft of the hair is usually firm and straight, and the scales are horny and dense, whereas in wool, on the other hand, the scales are attached much less firmly, and their free margin is more prominent. Their edges are much more distinctly seen, and the notching at the

edge of the fibre is more marked. The contour of the free margin of the scales is also generally less rounded than in those of the hair, and in the finest classes wool is frequently notched in a more or less irregular manner. The scales are also less horny and dense than those of hair, and possess a transparent or translucent appearance, like wax or gelatine. The fewer they are, the nearer the substance approaches the state of hair, and it will be noticed that where care and attention have been paid to the health and comfort of the sheep, is also found the least tendency to any variation in the individual fibres.

Very great importance is attached by the manufacturer to these scales on the wool fibre, since they go hand in hand with the pure stock of the animal with reference to its value as a wool producer, giving to the wool the power of felting, the primary qualities of a good felting wool being a large number of spindle shaped cells with extremely thin and elastic walls, which respond very readily to the influence of water and heat, and permit of its free absorption into every portion of the fibre. The cells must be small, so as to impart the necessary flexibility and elastic nature, in order to enable the fibres to readily intermingle and mat together. Its constitution must be more of the nature of gelatine than horn, so that when submitted to the action of hot water, assisted by acids and alkalies, the cell walls are readily softened, the central or medullary portion of the fibre being absent in wools having the best felting qualities. A microscopical examination of a cross section of a fibre before and after felting, will show that the form of the cells, composing the inner structure, and the scales composing the outer structure have materially changed. The scales of the fibre in their normal condition are flat and very dense, and the internal cells only exhibit a small cell cavity, while after felting, it will be found that the outer cells have lost their flattened form and become swollen and in some cases, a distinct cell cavity may be present. The inner cells have also increased in width, and the diameter of the fibre as a whole is greater.

With reference to the fibre as found on the sheep, in some specimens, the ring-like scales are of great length, when compared with the diameter of the fibre, and this peculiarity introduces serious difficulties to the manufacturer, because the solid portion of the fibre ceases to be elastic and pliable, and easily breaks when subjected to flexure. In addition to this, all these fibres resist or are incapable of that felting action which is so important a feature in the true wool. These solid fibres also resist the entrance of dyestuffs into their interior, receiving in turn only a surface coloring, as we might say, and which in turn is easily removed by washing.

In some cases again, the outer continuity of the scales is not accompanied by a change of internal structure and when such fibres are usually classified as flat kemps, receiving the dye, but being incapable of felting, oval kempy fibres being most common in the fleeces of the uncultivated sheep.

Microchemical Reactions: Ammoniacal copper oxide produces considerable distension and brings the scales of the fibres prominently into view. Concentrated hydrochloric acid and sulphuric acid gradually dissolve the wool, with red coloration; nitric acid dissolves it with difficulty, producing a yellow coloration; and cupric or ferric sulphate dyes the wool black.

Of the composition of wool this estimate has been given: Carbon, 50 per cent.; hydrogen, 7; nitrogen, 15; oxygen, 24; and sulphur, 4. While 98 per cent. would be organic, 2 per cent. would be ash. The presence of sulphur in wool is, in some cases, liable to cause dark stains on the wool, when the fibre comes in contact with either metallic salts in the dye bath or metallic surfaces during processes of dyeing, due to the formation of metallic sulphides. On the other hand, when dyeing with certain basic coal-tar dyestuffs, its presence seems to aid in the dyeing, for when wool, mordanted with sulphur, is dyed with these dyestuffs, a darker shade is produced than on unmordanted wool.

(To be continued.)

Switzerland has 1,730 textile establishments, employing 97,193 hands.

CORRESPONDENCE AND NOTES

Upon Textile Topics At Home and Abroad.

NOVELTIES FOR COTTON FABRICS.

BY GEORGE COULSON.

Fig. 1 is a novel style of cloth in which a net or leno effect is given both up and across the piece. It is a style which is popular and is capable of being applied to any check or tartan fabric. The straight or plain cords are made of colored yarn, giving additional

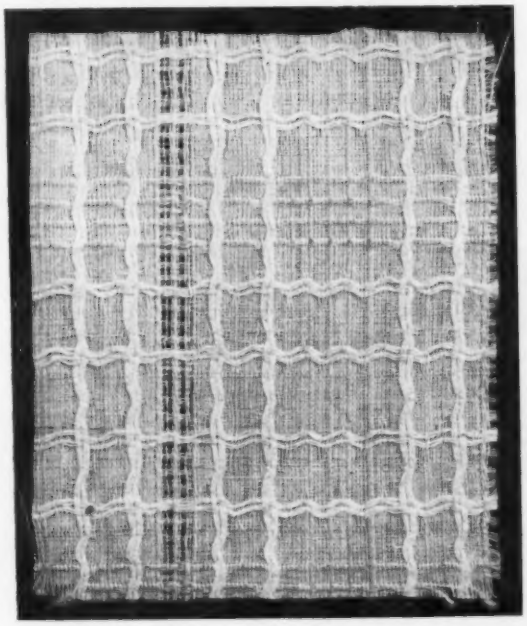


FIG. 1.

interest to the fabric. No doups are required, the effect being secured by the manner of interlacing the threads and the manner of denting. It will be seen from Fig. 5, which shows a portion of design and denting, that the ends at each side of the net effect alternately weave plain and float. When the ends at the left side are weaving plain they naturally tend to take up as much room as possible and force the net ends to the right (the ends at right hand side being left down to allow room for this) and vice versa.

The particulars are as follows: Reed 38 dents per inch; picks, 17 per 1/4 inch; ground twist 40s; ground weft 80s. Warp cords (plain), 4 ends as one, 2/40s colored. Weft cords (plain), 2 picks as one, 10s weft colored. Warp net cords, 3 ends as one, 2/40s=6 ends per strips. Weft net cords, 2 picks as one, 14s=4 picks per stripe.

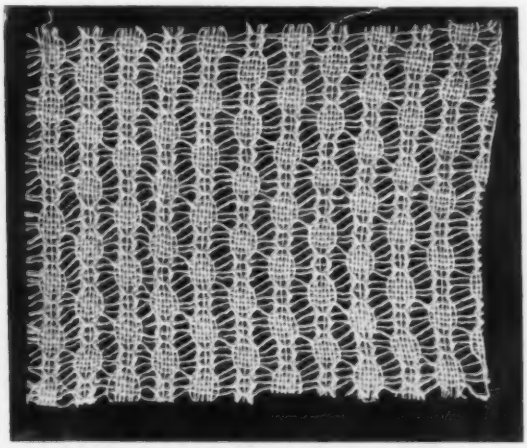


FIG. 2.

The take-up catch must be lifted when the 14s weft is being placed in. As the warp net ends are to be woven fairly slack, they should be placed on the front staves, so as to be under better control.

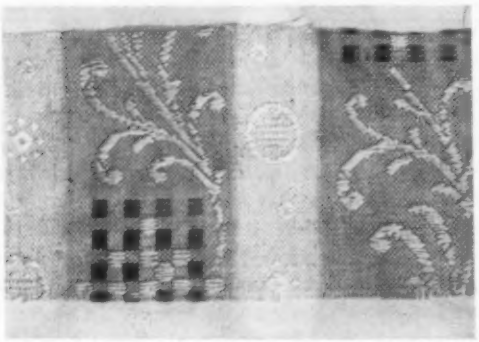
Fig. 2 is a neat all over leno effect, made from voile yarns and having an appearance of lace. This type of cloth is very effective for shirt waist materials, especially when worn over a colored foundation.

The particulars are as follows: Reed 22 dents per inch; picks, 24 per inch; warp all 2/30 hard spun (32 turns per inch); weft all 2/30 hard spun (32 turns per inch). Leno

threads placed on separate beam to allow for increased take-up.

The draft and peg plan are given at Fig. 6. The denting is as below:

1 dent, 3 ends=2 standard, 1 leno.
1 dent, 1 end.



NO. 3.

1 dent, 3 ends=2 standard, 1 leno.
3 dents, empty.

Although the cloth can be made in one doup, is it more advantageously woven on two sets of doups. A space equal to about 5 staves should be left between the doups and back staves, as shown in draft.

Various effects could be obtained on this style of cloth by having each alternate stripe of a different weave. It is also a style which would look well if made from mercerized yarns. Additional novelty could be introduced by checking with colored or fancy yarn threads.

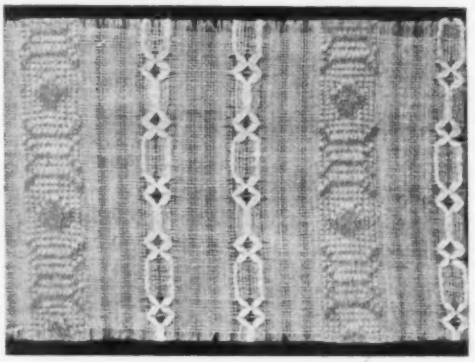


FIG. 4.

Fig. 3 is from a fabric of French origin. It is made from a cotton warp and spun silk weft. The narrow stripe is all white yarn, the ground warp being a pale sky color.

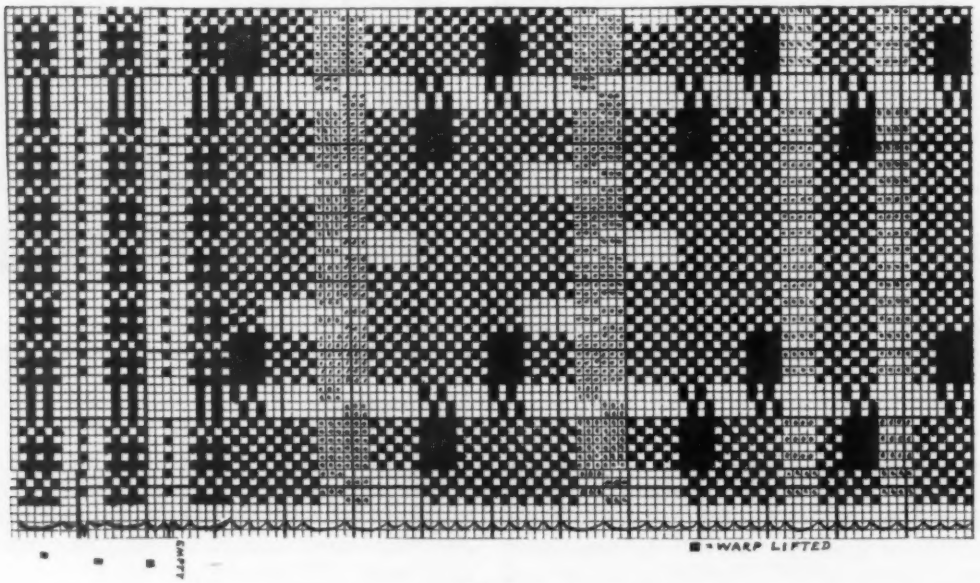


FIG. 5.

Quite a smart and novel effect is given to the fabric by the introduction of the small square extra warp spots which are of mercer-

ized yarn and of four different colors, namely, red, green, blue and yellow. When not required for forming spots, the yarn floats at the back and is afterward sheared off. It will be noticed that the top and bottom rows of spots are well bound in, thus preventing the spots fraying or pulling out after being sheared.

The particulars of the cloth are:

Reed, 37 dents per inch, 2 ends per dent; picks, 18 per 1/4 inch; warp, 2/80 white and

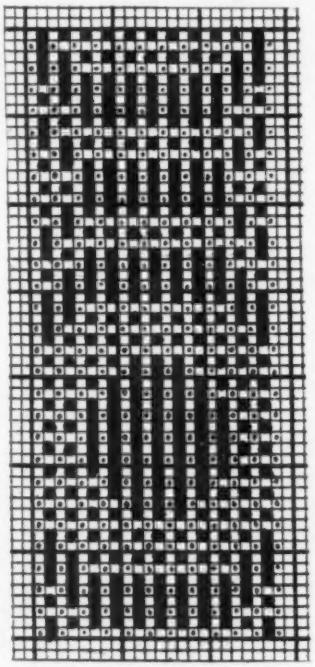


FIG. 6.

pale sky color; extra warp, 2/60 mercerized various colors; weft, 50s spun silk.

Six ends of mercerized yarn go to form each spot and are drawn in end and end with the ground ends.

embroidered or other spot were never more popular than at present.

Fig. 4 has an effective appearance, given by the shadow stripe ground and the bold figured mercerized and fancy leno stripes.

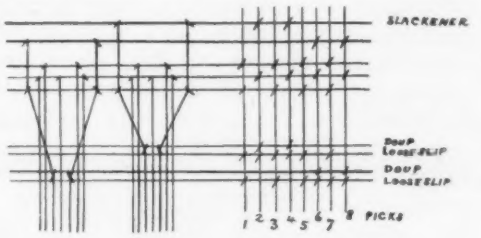


FIG. 7.

Fabrics on these lines are likely to be in demand. The net stripe is made from bleached mercerized yarn and forms a good contrast with the rest of the cloth which has been made from Egyptian yarns and simply washed and calendered in the finishing process, thus retaining its natural ecru color. This cloth would also look well if made with colored mercerized yarn for the figured stripe, the ground being white, with colored standard ends behind the net ends. Fig. 7 shows design of the stripe; Fig. 8 the lifting plan of the net.

In order to give a good, firm appearance and throw into prominence the mercerized yarn, and also at the same time prevent difficulty in the weaving, the ends separating the mercerized figuring ends are drawn two ends in a heald. The mercerized ends are also drawn double. The ground is perfectly plain, the shadow effect being obtained by denting. A good cover should be sought to prevent reediness in the crammed portion. To get the best effect in the shadow portion it is advisable to use as fine yarns as possible.

The particulars of the cloth are: Reed, 32

FIG. 8.

Quite a variety of styles could be made on the lines of this cloth by the application to brocade or dobby figured patterns of extra warp spots, especially as cloths having an

dents per inch; picks, 18 per 1/4 inch; ground twist, 60s or finer; weft, 90s; mercerized figuring ends, 2/40 drawn double; net ends, 2/12 mercerized (bleached).

Denting of figured stripe: (1 double end 2/40 mercerized and 1 double end 60) 1 dent; repeat 11 times.

Denting of net stripe: 1 dent empty; 1 dent 1 end 2/12 and 3 double ends 60s; 2 dent empty; 1 dent 1 end 2/12 and 3 double ends 60s; 1 dent empty.

Denting of ground: 1 dent 3 ends 60s; 1 dent 3 ends 60s; 1 dent 2 ends 60s; 1 dent 2 ends 60s.

THE PROCESSES OF SILK FINISHING.

BY JAMES CHITTICK.

(Continued from January.)

Special effects and patterns of an irregular sort may also be obtained in moires. There is the well known moire antique, with its bold, clearly defined lines, the stripe of the moire francaise, and the shiny faces of the moire mirroir and moire soleil, in addition to many other effects, spots, figures, etc. These designs are obtained by scratching, or displacing by mechanical means, before pressing the threads in places on one side of the goods, and this displacement starts the desired effect in the moireing and exactly duplicates itself on the other side of the piece. Certain fabrics such as louisines, which, though rather coarse in weave, have not strongly defined ribs, lend themselves well to the less clearly defined moire effects like moire soleil, etc.

Another style of moire is obtained by passing full width, single cloth, at heavy pressure, under a heater and finely fluted steel roller—the ribs of which correspond to a greater or less degree with the ribs of the cloth. This is not a usual method for broad goods, though used at times by the ribbon manufacturers.

The demand for moires generally comes suddenly, and those who can get out the goods promptly get the cream of the trade. If a manufacturer prepared for making them only after the demand had developed the fashion would be out before he could get his plant installed. People with finishing plants, therefore, generally have calenders, or presses, suitable for moireing on hand, though they may stand idle for months or even years at a time, but when the demand for moires comes they are then in a position to take prompt advantage of it.

The moireing process is naturally somewhat destructive in character owing to the crushing pressure and the great heat, and in the pressing the slightest wrinkle or fold will be pinched so that it will show a cut as clean as if made by a knife, and if the selvages are not suitable they too will suffer badly from cutting. There is also a process known as embossing, or gaufreing, for impressing small pattern effects on the surface of goods by passing them, under pressure, between suitably engraved rollers. This process is generally applied to thin soft goods and is not very extensively employed for silk goods, though many velvets are treated in that way.

Before final folding it is well to pass the pieces through a brushing machine to remove any dust, threads, or other material that may be on the goods. For such brushing either soft bristle brushes or slats covered with plush or baize can be used, either separately or in conjunction.

Special treatments also of various kinds are employed from time to time to get particular effects on one or other of the multitude of woven fabrics in silk.

The goods after being finished are now folded in one and a quarter yard folds, either on a table with the old fashioned sticks or on the folding and measuring machine; the length is noted, and they may be inspected then or later. The stitching connecting the pieces in the roll is pulled out as they are measured and the raw heading ends of the pieces are trimmed off with the shears. They now have the inside white paper put round them and are then folded into their final shape and stitched at each side in the middle. A soft twisted cord of spun silk or mercerized cotton is employed for this purpose and the color generally used by silk finishers is green. The ends of the pieces as now folded will probably be found to be hairy, and this is singed off with a gas or other torch. The outer paper is finally put round the piece; this paper should be a trifle wider than the goods to protect them better. It is then tied with tapes, particulars are marked on it in pencil, and it is ready for the market.

The custom has grown up, how no one

seems to know, of putting up silk piece goods in buff and white papers—buff on one side, white on the other—with the buff side out. Other colors are seen to a limited extent, such as dark blue and white, light blue and white, light green and white, etc., but their use is confined to special lines of goods where manufacturers desire to give some individuality to the appearance of their product.

The customary tape used is of a full crimson red color of good body and highly finished, and three-eighths inches wide.

The stock of supplies for a finishing plant does not represent any considerable sum of money, as they are low priced commodities. There will be a considerable number of large rolls of finishing paper, some barrels of glue or other sizing materials, and a stock cut to the exact sizes, of the outside buff and white and the inside white paper, in which the goods are put up; and then there are a good many wooden rollers needed. The other supplies are of a minor character. The papers referred to will cost between three and six cents a pound, according to the kind and quality, and the glue from ten to fifteen cents a pound.

The floor space required for a plant is not excessive, but it should be well lighted, both naturally and artificially. An area of four or five thousand square feet should be sufficient to house a good plant that would take care of the production of from five hundred to perhaps one thousand looms, unless the output was of so varied a character that a great variety of special machinery would be needed.

The power annually consumed in a finishing plant is not large in the aggregate, as but few of the various machines will be running at once. Most of them, except calenders and presses, do not require much power to drive them. At the same time a sufficiently large supply of power should be provided so that if most of the machines were running at once there would be enough power to go round, but for an area such as referred to above a unit of from twenty to twenty-five horse power would probably be sufficient under ordinary circumstances. Water, live steam, and gas connections are also required in the room.

The cost of plant varies greatly. If a mill even a large one, were turning out solely goods of a simple and uniform character, such for instance as might only need to be gummed and broken, a very limited amount of machinery would do the work, but if a wide variety of goods, needing special treatment, were produced, quite a large number of machines would be needed. In this respect an individual manufacturer, finishing his own goods, has some advantage over a job finisher, for while the former provides only the kind and number of machines needed to finish his output, the latter must be prepared to finish goods of all kinds that may be sent him, and so has to have a much more diversified plant and to employ a large staff, with a consequent loss in the cost and efficiency of the labor.

For the output of five hundred to one thousand looms the machinery might cost on an average between $3,500 and $10,000, according to the work to be done, and there would also be the transmission machinery, piping, blowers, ventilators, etc., and the small equipment—scales, measures, etc., etc., to be provided.

A boss finisher should be a man of good experience and of much intelligence and judgment, and able to convey his ideas and instructions to his help very clearly. Unless the plant is a very large and busy one there is nothing to prevent his doing his full share of the manual work of the department by running a machine as the occasion requires. As goods are received for finishing he should look over or supervise the looking over of the pieces, which he may have separated into such groups as light, average and heavy, and he will then give the proper instructions as to the treatment to be accorded to each group. He should carefully follow up the goods as they are finished to see that they then correspond closely with the standard samples to which he is working.

The opinion seems to prevail among broad silk manufacturers that for plants of two hundred and fifty looms or so, and below, there is little or no saving to be made in doing one's own finishing, and that it is then better to have this work done outside by a public finisher. From about four hundred

looms and upward the case is different, as the unit of cost is then greatly reduced.

The outside job finisher in figuring his general expense has to provide for the cost of a large number of items of expense that would already be carried by a manufacturer contemplating installing his own finishing. He has also to provide for partners' salaries, bad debts, for an expensive wagon delivery service, for his office force and business office and expenses, and for one or more outside salesmen or canvassers, and also he naturally expects to make some profit. He is further, as stated above, at some disadvantage on account of the size of the plant and the number of the employes that he must carry.

These things should all be saved by a large manufacturer who does his own finishing, and with proper management, a large and steady output and a good man in charge, he can fairly count on cutting his finishing expenses in half by doing the work himself. In addition to this very large pecuniary gain he has the advantage of the saving of handling, of time taken in finishing, of the facility he has for getting quickly forward samples, sample pieces and hurry orders, of personal knowledge of the treatment his goods are getting, and, last, but not least, of being certain that any special styles or fabrics will not become public property before he has got them on the market himself.

ORDER AND MANUFACTURING BOOKS FOR A WOOLEN MILL.

BY CHARLES HERITAGE.

(Continued from January.)

Fig. 8 is the method of making out lot tickets for the different rooms. After the wool is weighed, the grade and amount should be written below the double lines on the card room ticket, to correspond with those above the lines. This ticket is then sent to the card room for the overseer to

CARD ROOM

DATE Sept 11 LOT 103 CARD 2

STYLE W & F COLOR 12 Oxford Mix

RUNS W 5 F 4¾ POUNDS 275

White xRolled Wool	3 Grade Black Wool	Fine Black Shoddy	12 Ox Mix Roping Waste	12 Ox Mix Card Waste
64	218¾	25	7	18
64	60 90 68¾ 218¾	25	7	18

SPINNING ROOM

DATE Sept 11 LOT 103 CARD 2

STYLE W & F COLOR 12 Oxford Mix

RUNS W-5 F-4¾ POUNDS 275

TWIST W-R F-Z YARN SPUN

½ Warp & ½ Filling

WEAVE ROOM

DATE Sept 11 LOT 103 CARD 2

STYLE W & F COLOR 12 Oxford Mix

RUNS W-5 F-4¾ POUNDS 275

TWIST W-R F-Z

DRESSING ROOM

DATE Sept 11 LOT 103 CARD 2

STYLE W & F COLOR 12 Oxford Mix

RUNS W 5 F 4¾ POUNDS 275

TWIST W-R F-Z

REMARKS

Hurry this lot as fast as possible

FIG. 8.

CARD ROOM

1906

DATE	LOT	COLOR	WT.	WARP	FILLING	CARD	RUNS	TWIST	REMARKS
Sept 11	103	12 Oxford Mix	275	W	F	2	5/4 4/F	S/Z	
" "	104	3 Full Black	700	W		3	3	R	

FIG. 9.

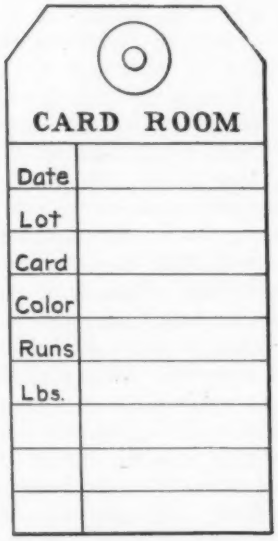


FIG. 10.

copy in his lot book. After the lot is started on the card, and the fourth drawing spool taken from the first breaker there should be a sample from seven to eight inches long from the drawing spool wrapped around the stub of the ticket. This ticket and sample

CARD ROOM DAILY REPORT

Sept 11, 1906

CARD	LOT	COLOR	USE	LBS	SIZE	STYLE
1	100	5 Lt Blue Mix	W	500	5	
2	101	5 " " "	F	550	4½	
3	99	3 Full Black	W	300	3½	
4	95	10 Blue	W	150	3½	
5	103	12 Oxford Mix	W	400	3	
6	104	3 Blue Black	F	350	3	
7	105	1 Gray Mix	W	1000	5	
8	102	1 " "	F	1000	4¾	L T
9	97	15 Bleached White	S T	200	8	"
10	94	4 Black	S T	250	6	"
11	96	14 Red	S T	150	8	"
12	98	17 Steel Gray	W	1200	4½	

REMARKS

Lots not on the cards					
215	17 Steel Mix	F	800	4	
216	18 Lt Gray Mix	W	700	4½	
217	19 Med Dk Gray	W	900	5	

FIG. 11.

SPINNING ROOM

1906

DATE	LOT	LBS	COLOR	CARD	MULE	WARP FILLING	RUNS	TWIST	YARN SPUN	REMARKS
Sept 11	103	275	12 Oxford Mix	2	2	4, 4/3 F	5 3/4	W 4 F 2		Hurry

FIG. 12.

should be returned to the maker of the ticket so it may be compared with the original sample as to shade. When the first spools of roving are sent to the spinning room the other three tickets should be sent with them. The spinning room ticket will be

SPINNING ROOM DAILY REPORT

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DATE	LOT	COLOR	MULE	YARN SPUN	WARP OR FILLING	RUNS	TWIST
Sept 11	103	2 Oxford Mix	1	100	W	5	R
" "	104	2 Full Black	2	200	W	3	R
" "	"	2 " "	3	210	W	3	R
" "	105	12 Blue	4	128	W	3½	R

FIG. 13.

copied by the overseer in his lot book and he should take the spinning room ticket from the other tickets by tearing at the dotted lines, and file it as a record. The other two tickets are sent to the overseers of the weave room and dressing room respectively, who enter them in their lot books.

SPINNING ROOM WEEKLY REPORT

Sept 11, 1906.

LOT	LBS	WARP OR FILLING	RUNS	TWIST	COLOR
100	180	W	5	R	5 Light Blue Mix.
100	183	F	4¾	L	5 " " "
211	300	W	3	R	2 Full Black
212	126	F	7	L	14 Blue

FIG. 14.

In the book shown at Fig. 9 the overseer of the card room should enter each lot as the ticket comes from the dyehouse. The method of making out the card room ticket is shown at Fig. 10, which should be tied to one sheet of each lot as it comes from the picker room. This ticket should have the date, lot number, card number, color, runs and pounds.

The daily report of the card room is made out as shown at Fig. 11. This gives each card a number with the number of the lot, and the color, the use of each lot, warp or filling, and the approximate number of pounds not used; also the size of the yarn to be spun from it and the lots picked and ready for the cards.

The overseer of the spinning room makes a record of each lot as the tickets come from the card room, as at Fig. 12. Fig. 13 is the spinning room daily report. This gives the lot number, color, and amount of yarn spun each day. Fig. 14 is the weekly report of the spinning room.

(To be continued.)

ENGLISH NOTES.

(By Our Special Correspondent.)

Enough is seen of figurative and purely paper comparisons of British and American prosperity. Not so often do we get a straight answer from manufacturers to the question "Where would you rather carry on business, in England or America?" The answers of two men—one a woolen manufacturer and a free-trader, the other a machinist and a believer in tariff-bargaining—are both to the same effect. Both have spent sufficient time in the States to see how business is done there and both have exchanged intimate confidences with representative members of their own industries. They unite in believing themselves to be best off in England. From what they have seen, they agree that America offers them no better fortunes for equal effort. Of course conservatism may explain their preference for the English ways of doing business and of living. The rest is merely a matter of the money you make and the difficulties you encounter. As a matter of cold business alone they prefer English chances.

Note that the question is not whether they would not in any circumstances establish works in America. It is one of whether they would choose to exercise an option that is not wholly impossible to either of them, and two men only, both of mature years, are responsible for the opinion. As occasion offers, Americans might usefully compare notes with other visitors as man-to-man talks have a value that is denied to bare statistics.

* * *

The total abolition of steaming in Lanca-

shire weaving-sheds is demanded by an almost unanimous vote of the operatives. For the outcry against artificial humidifying, young and over-zealous medicos are blamed. Their precise grounds of objection are none too clear, but it is probable that the heating of the air to make it carry moisture without condensation is more serious in their eyes than the presence of diffused moisture itself. Without humidification we should speedily see change in the sized-cloth weaving trade. And an expert suggests that to squelch the agitation manufacturers need only shut off all steam in the sheds for one month of frosts and dry winds. In that way the argument would address itself to the weavers' pocket.

Basing argument on humidity alone it has been demonstrated that in Burnley mills where wet and dry bulbs showed a relative humidity of 79 per cent., open air observations showed 95 per cent. But without reckoning the difference of temperatures these appearances must be delusive.

In the cotton mills the physical fact is recognized that the higher the temperature the more moisture will air carry. Physicists show that in raising air from 40° to 95° F., its capacity for holding vapor may be almost quadrupled. The truth is reaching dyers at last, and to some it has occurred that their houses might be as free of steam in winter as in summer were the air of the room warmed. Makers of fans and ventilating appliances are pressing this fact home. The objection to vapor in process of condensation would certainly seem more valid than to steam that is held in imperceptible suspension.

* * *

"Cradle-rooms" in connection with cotton mills are the subjects of a proposal on which withering scorn is poured by some manufacturers. Hostility is perhaps directed less to the creche itself than to the suggestion that nursing mothers be allowed to leave their looms to feed their infants in the mills' nursery. Instinctively the Lancashire employer opposes whatever looks like molly-coddling, and he takes a strictly limited view of the employer's responsibility in aiding the physical deterioration of townspeople. Complaint is heard that the operative grows altogether too dictatorial and too faddy. And the attitude of workpeople towards the question of steaming and such matters does stir the animosities of those who think that operatives should be seen but not heard.

* * *

A new artificial silk for which liberal claims to merit are made is the invention of a Dr. Thiele of Belgium. In the 40-denier thread there are about 40 filaments, against the eight or nine of natural silk. The thread is less tubular, more pliant and of better covering power than artificial threads with fewer strands. As are some other processes, the new one is adaptable to the production of artificial horsehair. The silk is being made on a small scale in Belgium where it sells for $2.50 a pound, and arrangements are pending for its manufacture more largely in other countries. The Association of Chemical Industry in Germany predict that like madder and, to a less extent, indigo, natural silk is to disappear. Chemists will surely succeed before long in substituting wood fibre." Meantime a member of the silk trade is wondering how soon artificial silk will be made suitable for the trade in short plushes.

* * *

During last year silk throwsters and spinners in England had little opportunity of making money. Especially in the waste spinning trade, which survives principally to spin for America, are margins discouraging. Dissatisfaction arises from the prices of Eastern wastes. Either from force of circumstances or by skilful manipulation prices for wastes are constantly better than prices for yarn.

* * *

Cheap wooden roller gins are being distributed to natives in Yorubaland with a view to increasing the cotton export trade from Nigeria. Labor is so cheap there that soft, clean, coarse cotton yarn hand spun from native cotton sells in the bazaar at 16 cents. A native hard yarn finer than 6s sells for 38 cents. It is refreshing to hear that a cotton industry still exists using only four implements between boll and thread. With a small slab of hard wood, a thin iron spindle, an ordinary bow and a wooden spin-

dle the "mill" is equipped. Progress is slow, but observers declare that in all but the evenness of the thread West African yarn is the equal of that from the best machinery.

* * *

Accounts from America indicate a lively interest in the offers made by agents in England who recruit help for Southern and other mills. It may make matters no better to know that not all offers have been high. Individuals known to me have taken engagements through a private individual, also known, at the rate of $6 to $6.50 a week. Advances of money rising to $60 have been made to defray passages and responsibility for the amount has been assumed by parents or friends on this side. The arrangement in some instances has been to hold back all earnings in excess of $5 a week until the advance has been worked off. These facts relate to the immigration of young and unskilled men who have been given work in dyeing and other departments. Names and exact particulars must be withheld in justice to the poor guarantors, but there need be no doubt of the authenticity of the information.

* * *

Much international wire-pulling by diplomatists has apparently failed to destroy the effect of the concession granted by the Emperor of Abyssinia to a firm of Manchester merchants. A company to supply rain-proofed brown sheetings in exchange for coffee has been formed. Orders for some 6,000,000 yards are said already to have been booked and this no doubt represents a considerable transference of trade from America. The incident emphasizes the desirability of making the tent and sheeting waterproof that is offered for sale in other countries.

* * *

Mechanical-stokers are now in something like universal use in well-equipped English mills. The arrangement of traveling fire-bars and steam blower permits of the use of coal that is little better than dust. The parts of the mechanism in contact with the fire require periodical renewals, but the substitution of a six-shilling for an eight-shilling coal pays for this. Satisfaction with these appliances is general, but steam-users are beginning to discuss the relative virtues of automatic-stokers versus chimney fans. Low fuel can be used where efficient fans are fixed and indeed there has been trouble in the towns about fans that threw grit instead of smoke out of the top of the stack. It is argued that the steam-blowing of fires causes a perceptible wastage of the steam and also that the lower the pressure and the more immediate the need of more steam, the less efficient the blowing is.

These are considerations affecting especially people who require varying steam pressures. Where the load is constant the boiler heat is constant also. In working a dye-house it will sometimes be needful to make large drafts of steam. And it makes a material difference in the time required to set a vat boiling if there is only 30 pounds pressure instead of 40 pounds. Before the days of the automatic stoker dyers would maintain 80 pounds in the boiler, which was brought down to 40 pounds at the dye-house by means of reducing valves. For the sake of economy in fuel the boiler reserve has been abolished and directors show themselves more willing to save money at the furnace-mouth than to save time inside the dye house. The wisdom of the policy is subject to revision. It is pursued because the reduction of the steam-bill from 6 per cent. to 5 1/2 per cent. of the working cost is a more clearly defined gain than that made in time-saving over some item of work. A smaller output can always be attributed to bad trade—which is a temporary factor. The smaller coal bill is a permanent consideration.

* * *

Most of the mills are wedded to steam and are disinclined to adopt any alternative. Electricity is looked upon as the power of the future and it is obtainable at prices down to one penny per unit. Yet it is possible to cite the example of a large firm of dress-good weavers who have discarded steam and cheap electric power as well to take up with gas-engines and suctions or producer-gas. Little as the latter has been used in the textile industry it is unquestionably gaining favor among users of power.

DRESSING WOOLEN AND WORSTED YARN.

BY WILL NELSON.

Dressing or sizing has a twofold purpose; namely, to strengthen the yarn so that it may resist the striking of the reed against the cloth as it is beating in the filling; and to lay the outstanding fibres of the yarn so that the threads will not cling together during the weaving process. Without this sizing compound many warps could not be woven.

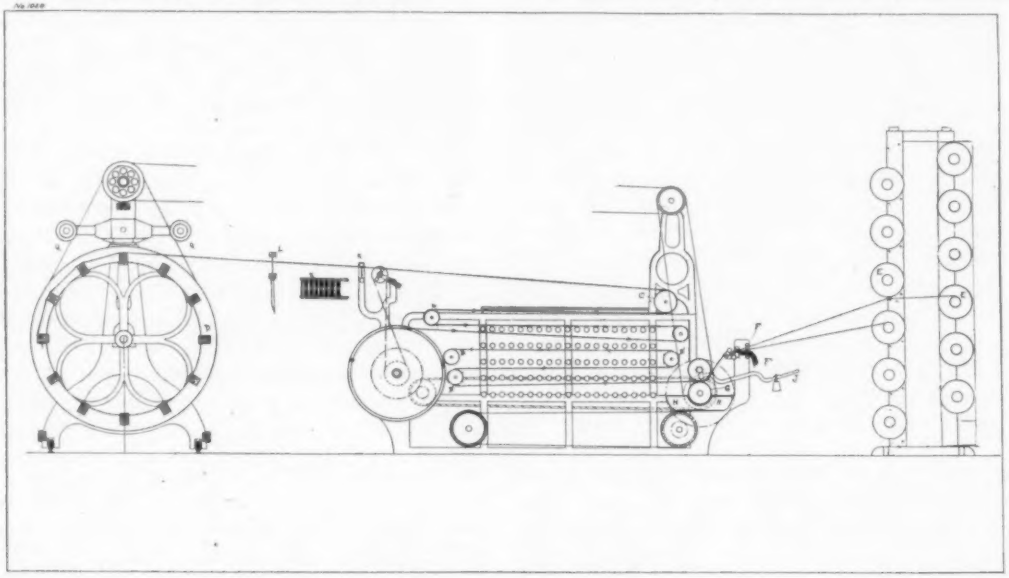


FIG. 1.

There are several machines used in the dressing of warps and a brief description of them may be desirable. Fig. 1, is an outline of the regular woolen dresser. The small circles represent five layers of steam pipes between which the yarn passes to be dried after the size has been added. The large copper cylinder in front of the pipes supplies additional drying surface if required. The circles, B, are hollow tin rollers around which the yarn passes, so adjusted that the yarn will not come in contact with the steam pipes. It will be noticed that B^1 and B^2 are fluted; these are the pipes that receive the yarn direct from the size vat and are used in preference to the others because there is less surface exposed to the wet yarn, consequently there is no tendency of the yarn to cling. The measuring roll, C, indicates the length of the yarn run on the reel, D. The yarn passes from the jack spools, E, through the pattern reed, F, and between the squeeze rolls, G; the lower squeeze roll is immersed in the size vat, H. The pressure of the top roll can be increased by the weight on lever, J. The squeeze rolls are covered with a layer of cotton cloth, then a layer of felted flannel, and often a top layer of cotton cloth. This padding is necessary to prevent the yarn from being pinched between the rolls. The two upper layers of cloth are taken off frequently for the purpose of washing out the accumulation of size which tends to make the cloth hard and glazed. The yarn passes from the squeeze rolls between the pipes, as shown by the arrows, over the measuring roll, through the block or lease rod, K, the condenser reed, L, on to the reel.

Woolen Yarn. A power loom warp can be made only in sections. A portion is run on the reel for the length required, then the reel is moved up the width of the section and another portion run on the reel, and the operation is continued until the whole warp has been run. The sections can be obtained by

the use of a number of jack spools, as shown in the sketch, the number of ends in a section determining the number of spools, or by the use of two or more back beams, and by cheese warping, which is the name given to a process of small sectional beam warping. The sections are made as wide as possible, as there is always a tendency for threads to overlap at the joining of each section and the large sections reduce the number of overlaps to the minimum. It is absolutely necessary that great care be exercised in starting each section; overlapping threads cause an uneven warp, resulting in uneven cloth and bad dyeing. It is impossible to remedy this fault when once the yarn is on the reel.

In the creel shown there can be placed 12 spools with 40 ends on each. Some creels will hold more. Fewer than 12 spools can be used and fewer than 40 ends can be placed on a spool, but it is not customary when making solid warps, the thread required being taken from a solid spool. For a 3520-end warp, 505 yards long, we have:

$$3520 \div 8 = 440, \text{ ends in one section,}$$
$$440 \div 40 = 11, \text{ full spools.}$$

The warp is to be 73 1/3 inches wide in the reed, and as it is customary and somewhat of an advantage to place the warp on the loom beam wider than the width in the reed, the section is made 9 1/2 inches wide:

$$9\ 1/2 \times 8 = 76 \text{ inches.}$$

In addition there will be seven pins separating the sections, one for each section:

$$3/16 \times 7 = 1\ 5/16 \text{ inches.}$$
$$76 + 1\ 5/16 = 77\ 5/16 \text{ inches, width of warp on the reel.}$$

The spools are made on the regular spooling frame and for solid warps are filled with 1,000 yards more or less, according to the count of the yarn. The spools are placed in the creel and the threads tied to the leader warp, which is hanging outside the pattern reed, F'. This leader warp may be the last portion of a previous warp, in fact, it is nearly always so, as it requires about 18 yards to go through the dresser. There are different ways of tying the warp to the leader, which will be explained in detail in the portion relating to pattern warps.

For this warp take a bunch of threads from the leader, also a number from each of the spools; tie the bunches together and then tie or twist one thread from the leader to one thread of the spools, beginning at the bottom spool and going to the top, or from top to bottom as may be desired. In the meantime the top squeeze roll has been raised from the bottom roll. After all the threads are tied in, the yarn is drawn through, the top roll is lowered, and after the knots pass through the lease rod, K, the threads have to be placed in the condenser reed, according to the width of the section. The necessity for this will readily be recognized: the pattern reed is a 12 reed, one in a dent; the lease reed is the same, one in a dent; and as 440 ends have to go in the space of 9 1/2 inches on the reel they must be condensed to that width. The condenser reed has ten dents to the inch.

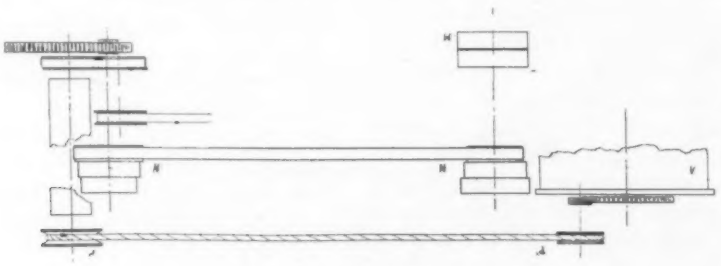


FIG. 2.

$$10 \times 9.5 = 95 \text{ dents,}$$
$$440 \div 95 = 4.6.$$

That means that there will be four ends in a dent and 60 threads left over to be divided among the 95 dents. These must be

distributed as evenly as possible or there will be ridges formed in the warp as it is placed on the reel. As 60 is practically two-thirds of the dents the threads could be drawn in, 5, 5, 4, missing one place occasionally. The pins are placed in the bars of the reel 9 1/2 inches apart, after which the bunch of yarn is placed on the pin that is fixed to the inside of the bars for that purpose. The lease is taken and, as will be noted, one thread passes through the block portion and one through the open portion, so that by pressing down the yarn those threads in the open dents pass below the ends in the block. This space is opened out beyond the condenser reed and a string inserted. The threads are then raised and the threads which were below those in the blocks will be raised above. This will make the opposite lease, when the space is opened out, near the other string, and a second string is inserted. These will keep a single thread lease, which is absolutely necessary to keep the threads in their relative positions. The lease must always be taken at the beginning of a section. The measuring motion is set and as the roll is 18 inches in circumference and a single worm at the end of this roll directly drives the indicating gear, one tooth will equal one-half yard.

The method of driving the machine is shown at Fig. 2. M is the main driving pulley, N, the stepped pulleys used to adjust the delivery of the yarn from the squeeze rolls. PP′ are grooved pulleys, which transmit motion to the drum or cylinder. The grooved pulley, P, is an expanding pulley to be adjusted in accord with the stepped pulleys. It is absolutely necessary that these pulleys be in accord. The delivery of the yarn from the rollers must not be greater than the take-up on the reel or the result will be that the damp sized yarn will follow round the bottom roller or around the tin roller, in either case resulting in spoiling that portion of the warp.

The compound most commonly used on woolen yarns is made of 25 pounds of glue, 2 pounds of tallow, and 100 gallons of water. Another solution is made with 10 pounds of starch, 14 pounds of glue, a little tallow, and 50 gallons of water. The following compound has been used for yarns that were cylinder dyed: a light solution of glue and tallow, the extract from 15 pounds of Irish moss and 50 gallons of water.

No matter whether the warp is solid in color or fancy, it must be kept in mind that the weights on the jack spools must be carefully adjusted, for it is essential that the weights be the same if the spools are the same size. It is impossible to remedy later faults that are made here; tight threads and tight sections will spoil the cloth. After the condenser reed is adjusted in relation to the pins in the reel the steam is turned on and the machine started. Watchfulness is necessary to prevent the running out of threads: the size must be kept up to strength and the weights adjusted as the warp is made. After all the sections have been placed on the reel the warp is connected to the leader on the beam, the two belt pulleys, 6, are spread out by raising the weight lever and at the same time the friction is added to the reel. The amount of friction or weight necessary can be adjusted by the weight on the lever. Too much weight is detrimental as it strains the yarn sometimes breaking the threads. Too little weight makes a soft warp, which will not weave well. Press rolls are now being used to make a firm warp, which allows a little less weight to be used on the reel; further, a longer warp can be placed on the loom beams. The press roll is held in contact with the yarn as it is placed on the beam.

(To be continued.)

FINISHING WOOLEN DRESS GOODS.

BY H. RICHARD.

(In Oesterreichs Wollen und Leinen Industrie.)

Greiz and Gera in Germany are noted for the high grade of dress goods produced there. In a recent issue of "Oesterreichs Wollen und Leinen Industrie" are some interesting particulars regarding the method of finishing the Greiz and Gera goods. These goods consist of all wool, half wool, and cotton fabrics, although a considerable quantity of heavier fabrics are made. A characteristic of these goods is the omission of the fulling process in finishing. Care is taken to handle the fabrics so that the wool fibre is not felted in any way, the object being to fix the fibres in the position in which they are found on coming from the loom. To attain that

object the first process of finishing is usually that of crabbing. Many fabrics are first singed in order to avoid felting. The gas singeing machine produces a clearer face than the plate machine, but the latter is used to a considerable extent on account of the peculiar appearance it gives to the goods.

Crabbing machines are usually made with three tubs and three sets of rolls. The pieces are first wound on rollers, from which they are run into the first box containing boiling water, to which is added sal ammoniac or soda and a certain proportion of soap. After passing through this solution the pieces are wound on the lower roll at the first box. The appearance of the finished goods depends greatly on the amount of pressure applied to the rolls while winding the cloth. After letting the cloth turn on the roll for some time the pieces are run through the next box, which is filled with boiling water. They are again wound on the crab roll under increased pressure. The process is repeated in the third box with this difference that after the cloth has been wound on the crab roller the hot water is run off and the box filled with cold water. It is found that this crabbing process cleans the goods and sets the finish.

In many mills goods are steam blown after being wound on the perforated rolls. Another process consists in winding the cloth on rollers then placing six or eight pieces in an enclosed kier and subjecting them to the action of steam. The best process, however, consists in winding the goods on perforated rollers, blowing the steam through the cloth, then reversing the pieces to another roll, and again steam blowing them. A large quantity of the goods made in Greiz and Gera are singed after crabbing and steaming. The pieces are colored by the ordinary method; blacks are often crabbed after dyeing. Dyed goods are usually rinsed in the open washer. Light weight fabrics are sized on the back before treating. After treating the goods are usually pressed and sponged by the ordinary methods. In shearing a hollow rest is used in order to prevent damage to the goods by knots or other irregularities in the yarn. The plate press is generally used. All wool fabrics are pressed in a rotary machine and afterward in the plate press.

NEW INVENTION FOR TREATING FLAX.

BY CHARLES RICHARDS DODGE.

In a recent Consular Report appears an article under the title above, relating to an Australian "quick-ret" process, which in tone is decidedly "yellow." The invention is referred to as a machine, "consisting of three pairs of rollers." After the flax "in its rough condition" is passed through this "machine," it is immersed for one hour in a bath of hot water "containing added ingredients (not chemicals)." Then the material is drained and dried, put through the breaking machine and finally through the scutcher. To produce a superfine quality of product it is washed twice, "which makes the fibre pure white." It is claimed to produce a much larger yield of fibre, of greater strength, and of unstained or natural color, which for the purpose of manufacturing "such lines as linen, damask, etc., requires no chemical bleaching in the finishing operations."

This is the "same old thing," only the statements are a little more ridiculous—crushing with three pairs of rollers; immersion for an hour in hot water with "added" ingredients that are not chemical; a second bath in the same and the fibre comes out pure white. How any chemical expert would smile at such a proposition, and how any old Scotch or Irish flax man would turn up his nose at a flax that could be prepared in two hours from the "rough,"—and which, after it is spun and woven requires no chemical bleaching in the finishing operations. The trouble with all of these quick-retting systems is that the "life" of the fibre is destroyed, and where there should be a softness and oiliness to the touch,—giving what is called the "nature-feel,"—there is only harshness and dryness. And thereby hangs a tale:

Some years ago the writer was asked to give an expert opinion upon the value of the product of one of these "chemical-ret" processes. The people interested were told that if they would supply a quarter of a ton of fibre, the writer would put them in touch with a spinner who would test the product in actual practice. The arrangement was made, and some months after, the superin-

tendent of the mill where the test was made gave me the sequel. Said he:

"I told them if they would come with their flax, and stay with it while it was being manufactured, in order to satisfy themselves that the test was fairly made, I would gladly undertake it. They came with their fibre, and I put it through for them; and all went well until it reached the spindles.

" 'What's all this dust flying in the air?' the chemical-ret man asked.

" 'That's your fibre,' said I.

"He stared a moment, then looked into my face as he said: 'It isn't worth a d—!' "

The writer does not anticipate that there will be any serious falling off in the demand for European flax on account of this wonderful new process—which is said to bleach flax pure white, in two hours, without chemicals.

A STRAINER FOR WASTE LIQUOR FROM WOOL SCOURING MACHINES.

In our December issue there was a brief notice, under the head of New Machinery and Processes, of a strainer for waste liquor, the invention of Wilhelm Lau, a wool manufacturer of Arnswalde, Germany. The device is intended to separate the fibre from the waste liquor and has worked so well at Arnswalde that it is now being built for the trade by Oskar Schimmel & Co., of Chemnitz.

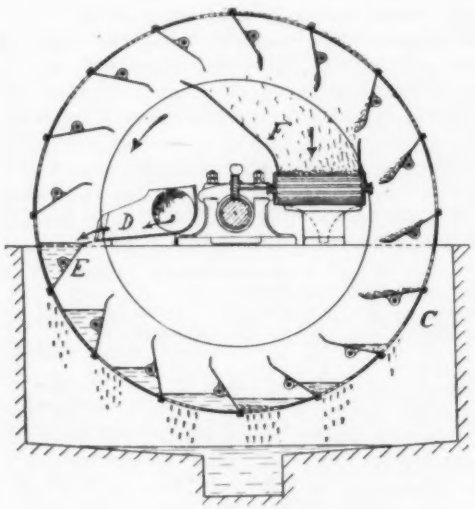


FIG. 1.

Every wool manufacturer knows of the loss of raw material that is carried away by the waste liquor from wool scouring and similar machines. The strong suction when running the liquor off draws more or less fibre through even the smallest perforations in the false bottoms of the tubs. In time the perforations become enlarged by the action of the liquor on the metal, this process being especially rapid when the bottoms are made of iron. As the holes get larger the loss of fibres becomes greater.

Fig. 1 shows a longitudinal section of the Lau machine; Fig. 2 is a cross section. It consists of a large cylinder, C, which revolves on an axis and is enclosed on both sides. Inside this cylinder are fastened a number of wings, E, at regular intervals and the cylinder is perforated for a space adjacent to the base of each wing. The waste liquor comes from the machine through the pipe, D, and is delivered to the cell at the left of the cylinder. In this position the liquor can run from the cell only at the top, but as the cylinder revolves the perforations in the cylinder are brought gradually further below the level of the liquor, which thus escapes to the ditch below. In this way the fibres are allowed to settle gradually on the wings and when they reach the top they slide on to an endless apron which carries them into a suitable receptacle.

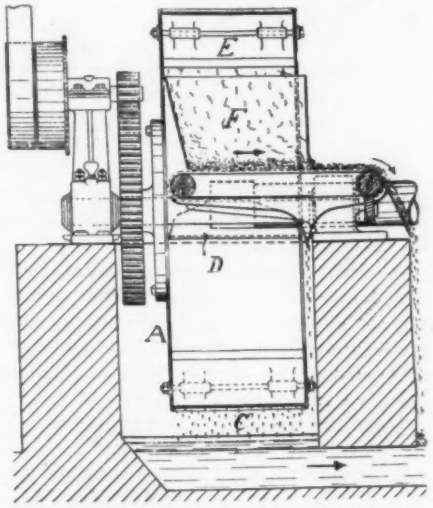


FIG. 2.

Questions and Answers.

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Our Account with Germany.

Editor Textile World Record:

Your January number came to hand today and we want to congratulate you on the business-like way in which you have discussed our trade relations with the German Empire. This report we consider the finest of its kind we have ever seen in a textile paper, or in fact, in any paper. We trust you will continue this work with the different countries that we trade with, if it is possible. This is something all manufacturers of this country should know and we hope you can see your way clear to continue this good work in the form mentioned. M. J. Toohey & Co.

Carding Hank Roving.

Editor Textile World Record:

What grain sliver should be carded for two-hank roving? What should be the drafts for the card, the first and second drawings, double six ends up, and of the slubber? Byron (657).

For making a two-hank roving, I would adopt as a basis the following drafts and weights:

Use a 13 1/2-ounce lap on the card and make a 65-grain sliver, using about 88 draft.

Use 6 draft on first drawing and 6 1/2 draft on second drawing; this will give 65-grain sliver from former and a 60-grain from the latter to be used on the slubber.

If only two processes of fly frames are used I would make a 2/3 hank on slubber, which would require a draft of approximately 4 3/4 feeding the 60-grain sliver. This would allow the 2/3 hank to be fed to the roving frame and as two ends would be run in together, a draft of about 6 would be necessary to produce a 2-hank roving.

J. T. B.

In the absence of any information as to the quality of cotton being used, I would suggest 60 grains to the yard to be carded for 2-hank roving, the draft of card 90, first drawing frame 5.50, second drawing frame 6.00, and slubber 4.50. I should also recommend a careful examination of the sliver of draw frame between front roller and tumbler spoons to see that the best results are being obtained. M. A. Cooper.

The draft of the first drawing doubled 6 ends up should be about 6. The draft of the second should be about 6 1/2.

The best draft for a slubber is from 3 to 3 1/2, and I think this is the draft to use in making 2-hank roving where there are two processes of fly frames between the slubbers and spinning frames. If the purpose to which the yarn is put does not require any great strength it would probably be better and cheaper to put a draft of from 4 to 4 1/2 on the slubbers and use but one fly frame process between the slubbers and the spinning frames. That these longer drafts will produce satisfactory yarn I know from experience, having made 18s in this way, which was entirely satisfactory. However, no one can give any hard and fast rule in regard to the length of drafts to produce the best results, as the drafts must vary with the stock used to get the best possible quality of yarn. W. A. S.

I would recommend that the sliver be carded 70 grains to the yard, the draft of the card 95, of the first and second drawings 6, and of the slubber 4, if the slubber, intermediate and roving are to be used. If only the slubber and roving frame are used, change the card sliver to 60 grains by using a 14-ounce lap instead of a 16-ounce, and keep the drafts as given. Greenwich.

Use a 14.5-ounce lap on the back of the card with a draft of 110, and allowing 5 per cent. for waste, would give a 55-grain sliver on the front. The draft of both drawings should be about 6, with six ends up. Use a draft of 4.26 on the slubber, which gives a grain in front weighing 12.9 grains per yard, or .77 hank roving. Two doublings in the creel of the fly frame and a draft of 6.2, will give 2 hank roving on the front.

B. M. P.

Speeds of Doffer and Cylinder.

Editor Textile World Record:

What should be the relative speeds of the doffer and cylinder on first or second breakers?

Eaton (623).

The relative speed at which to run the cylinder and doffer can be determined only by taking into consideration all the circumstances, including the kind of stock, the size of the roving and yarn, the production expected and the finish of the goods. If the stock consists of a mixture of cotton, shoddy and wool and is to be free from specks when carded, every effort must be made to ensure thorough carding of the fibres from the beginning

of the process. If the stock is delivered in good condition to the cards the work of carding is greatly facilitated. The picking of the stock is a very important process and has much effect on subsequent operations. The object of picking is to obtain a thorough blending of the fibres and a uniform distribution of oil, or whatever lubricant is used. The heavy stock that falls close to the mouth of the picker should be carried back and evenly distributed over the batch before running it through the picker again.

The first carding takes place in the feeders, where the combs must be carefully adjusted, giving the scale plenty of time in which to be filled. The feed should be heavy enough to give the required amount of doubling, and not so heavy as to give the feed rolls a spring in the center. The feed rolls should be adjusted so that they will hold the stock while it is being combed out, and at the same time clear readily so as not to become clogged. This ensures even distribution of the stock to the tumblers, which is of great advantage in carding. If the stock is not delivered evenly to the cylinder it will not be delivered evenly to the doffer. On fine mixed lots, whether composed of all wool, or of cotton, wool and shoddy mixed, it is a good plan to run the doffer more slowly in order to keep the stock longer in the machine. The speed of the doffer can be gradually increased as long as the drawing is clear and well mixed.

On heavy yarn, for which it is not necessary to have the stock carded perfectly clear, it has been my practice to get the stock out of the first breaker as rapidly as possible. I have obtained good results in running the feed rolls slow and the doffer fast, making the drawing lighter. This gives the same production, but of a better quality, and with the breaker running smoothly and not overcrowded.

The comb should be kept in good order with the teeth even and set close. Under these conditions the doffer will deliver well and strip the stock freely from the main cylinder. The cylinder and doffer of the second breaker are as a rule to be run at about the same adjustment as that of the first breaker. The doffer should never be allowed to become glazed over or filled with waste and dirt. The points must take the stock freely from the cylinder. A smaller roll, 2 1/2 or 3 inches in diameter, placed on the doffer and covered with short flexible fancy clothing, is found of great help to the doffer. It should be run the same way as the doffer, but at a slightly higher speed. Run the points of this so-called dickey far enough into the doffer wire and keep them smooth and sharp.

Anthony.

When running different kinds of stock a cylinder speed of 90 revolutions per minute gives the best results. There are cases, however, when this speed might be changed with advantage. For example, if a mill is running on all wool and fine stock that requires a good deal of carding and flies but little from the card while running, the main cylinder might be run somewhat higher, say 100 or 110 revolutions per minute. Then there are some instances where the best results can be obtained at a lower speed than 90, such as when the machine is running on short, coarse open stock, that drops more under the card. If shoddy is used in the mixes the card will not open it up so well at any speed below 90, and on that grade of stock, if the cylinders are run higher than 90, they will drop so much as not to be profitable.

The first breaker doffer is usually run a little slower than the second. We will assume that the finisher cards are fitted with Apperly feeds or some other feed of that description, so I will speak only of the second breaker doffer, which is assumed to be 24 or 30 inches in diameter. The usual speed of this doffer is about 15 turns per minute, but this speed must be varied according to circumstances. The main thing is to lay the feed on the feed table as soft and light as possible. If a large amount of stock is running through the cards it may be necessary, in order to keep the drawing down to the proper size, to run the second breaker doffer a little faster than 15. If good fine wool is used or stock where a large tube could be used, or when making light weight yarns from good stock, both first and second breakers may be run slower, in some cases as low as 10 revolutions per minute. For wool cards running on cotton, where the results are similar to cards running on coarse wool stocks, the speed should be about the same, or possibly a little lower. A. B. H.

I have found that a speed of 85 r. p. m. serves very well for a breaker 48 inches in diameter. The relative speed of the cylinder and doffer depends on the kind of stock to be carded and the results desired in the goods. For instance, with a half blood territory wool that is imperfectly carded it is very difficult to open it on the card. For a daily production of 225 pounds of yarn on a 48-inch set with a 24-inch doffer, a doffer speed of 10 or 11 turns will give good results. If the wool is specially open and lofty the doffer may be speeded to 12 or 13 turns. Usually I run the doffers on the first and second breakers at the same speed unless the clothing on the cylinder is in poor condition, then I run the doffers faster in order to relieve the cylinder wire. I am running

an iron wire cylinder today that has been run for 25 years. I find it is always better to run the doffer a little slower on wool and shoddy mixes than on all wool. I have run 20-inch doffers as slow as 8 turns on stock composed of 60 per cent. fine wool and 40 per cent. shoddy spun to 3 3/4 runs, 48-inch set.

with a production of 135 pounds per day from a

When running colored mixes better results can sometimes be obtained by reducing the speed of the doffer one or two turns per minute. It is not advisable to run the doffer so slow as to crowd the doffer wire, as this causes rough work, especially on shoddy mixes. With a 48-inch cylinder running 85 r. p. m. on a 24-inch doffer running 13 r. p. m. the surface speed of the cylinder will be 12,817 inches per minute and the surface speed of the doffer 980 inches per minute, or in the proportion of 13 to 1. With a 42-inch cylinder running 98 r. p. m. and a 20-inch doffer running 10 r. p. m., the two surfaces will be running in the proportion of 20 to 1. The doffer should run fast enough to take all the stock the cylinder delivers without crowding the doffer wire. I should want to increase the speed of the ring doffers by one or two revolutions per minute with Apperly feeds, and if the first and second breakers were already carrying as heavy a load as was desirable, I would increase the speed of the breaker doffers. This would prevent the doffer from dwelling at the cylinder long enough to get overcrowded.

G. L. P.

Draft of Worsted.

Editor Textile World Record:

I would like an explanation of the method of calculating the weight of worsted from top to yarn.

Slubber (757).

Although the size of worsted yarn is indicated by the number of 560-yard lengths per pound, that is, by a fixed weight system, it is customary to indicate the sizes of top, drawing and roving by a fixed length system. For this latter purpose a fixed length of 40 yards is ordinarily used and the weight expressed usually in drams (1/16 ounce), sometimes in grains. A fixed length is so used because of the convenience of making the frequent tests of the sizes of material in process. These tests can be made in no other way as easily as by measuring a given length and then weighing it. Forty yards has been generally adopted because it is a convenient length for the purpose. It has the advantage of being one-fourteenth of 560 yards. The worsted count is, consequently, equal to the number of 40-yard lengths in 500 grains (1/14 lb.) and is found by dividing 500 (grains in 1/14 lb.) by the grains in 40 yards. Conversely the grains in 40 yards are found by dividing 500 by the worsted count; the drams in 40 yards by dividing 18 2/7 by the worsted count. Thus:

500 ÷ Wors. No. = Grains per 40 yards.

18 2/7 ÷ Wors. No. = Drams per 40 yards.

500 ÷ grains per 40 yards = Wors. No.

18 2/7 ÷ drams per 40 yards = Wors. No.

The draft of worsted in process is the ratio between the speed at which the strand enters the machine and that at which it is delivered. If the front rollers deliver 5 yards of roving while the back rollers take in 1 yard, the draft of the machine is 5. The strand as delivered will in that case be one-fifth the size of the strand entering the back rollers. In other words, a given length from the front rollers will weigh one-fifth as much as the same length of the strand entering the back rollers. If a slubbing weighing 16 drams per 40 yards enters a roving frame having a draft of 8, the roving delivered will weigh (16 ÷ 8) 2 drams per 40 yards. In practice, however, two or more ends enter the drawing box or frame together and are drawn into one strand. This makes it necessary to multiply the weight of the single strand at the back rollers by the number of ends to determine the total weight of the strands drawn into a single strand. If two ends of slubbing were drawn into one end of roving in the preceding example, the size of the roving would be found as follows:

16 (drams) × 2 (ends) = 32 drams.

32 (drams) ÷ 8 (draft) = 4 dram roving.

In the following table the drafts of a top weighing 256 drams (16 ounces) per 40 yards are illustrated for the eight successive processes including spinning.

Process	Drams Entering	Doublings	Draft	Drams Delivered
1	256	6	6	256
2	256	6	6	256
3	256	5	8	160
4	160	4	8	80
5	80	4	8	40
6	40	2	8	10
7	10	2	8	2½
Spinning	2½	2	10	½

The calcuations of these weights are made as already explained in the case of the 4-dram slubbing. The spinning frame delivers a yarn weighing one-half dram per 40 yards. The count of the yarn is thus found as already explained:

18.3 ÷ .5 = 36.6 Wors. No.

It is evident that in calculating backward from yarn to top the process must be reversed. To find the weight of roving required to produce a 1/2 dram yarn with 2 ends at back and a draft of 10 the process is as follows:

1/2 (dram) × 10 (draft) = 5 drams per 40 yards of 2 ends.

5 (drams) ÷ 2 (ends) = 2 1/2 drams per 40 yards single.

If, as is sometimes the case, the size of the sliver in process is indicated by the fixed weight system, say by the hanks per pound, the calculation is reversed. The following example illustrates this:

Ex. Find the size of yarn spun from 2 ends of 7-hank roving with a draft of 10.

7 (hank, single) ÷ 2 = 3 1/2 hank, double.

3 1/2 (hank) × 10 = 35 hank yarn, Wors. No.

Conversely:

35 (Wors. No.) ÷ 10 = 3 1/2 hank, double.

3 1/2 (hank) × 2 = 7 hank, single roving.

The hank or fixed weight system, however, is inconvenient for worsted in process because, as already stated, the tests of the slivers for size must be made by a fixed length, ordinarily 40 yards. The calculations with the grain standard (grains per 40 yards usually) are made in the same manner as with the dram standard.

Steam for Dyeing Cloth.

Editor Textile World Record:

Answering Cyrus' question (764) in the November issue of the Textile World Record, I would say that from my experience in cotton dyeing in the rope form in a dye kettle it takes one pound of coal to raise 10 pounds of water to 180° F. in three-quarters of an hour. This applies to jig dyeing as well as dyeing in the rope. To dye 200 pounds of cloth it takes 1,800 pounds of water. To bring this water to 180° F., which is the usual temperature in dyeing most colors, in three-quarters of an hour will, therefore, require 180 pounds of coal, during which time 200 pounds of cloth will be dyed. This figures out at 14.4 ounces of coal per pound of cloth; therefore one yard of cloth weighing 10 ounces per yard will take 9 ounces of coal to dye. Conditions may change through variation of steam pressure and length of steam piping from the boilers, owing to heat radiation. This must be ascertained by the circumstances of each particular dye house, but a rough and ready rule, however, which is never far out is that it takes one pound of coal to dye one pound of cotton.

Expert.

Upon receipt of this reply from "Expert," we wrote him as follows:

Referring to your reply to the question regarding the amount of coal required to color a yard of cloth, I notice you have calculated the coal required to raise the temperature of the water to 180° F. in three-quarters of an hour. You do not state the temperature of the water when beginning to raise it, neither do you allow anything for keeping the liquor boiling when coloring the goods. I wish you would cover these points also.

To this we received the following reply:

Editor Textile World Record:

In reply to yours of the 24th instant I made some experiments along the lines asked for by "Cyrus," and the reply already given embodies the results I obtained. In dyeing, the water is run cold from a tap and varies in temperature during different seasons of the year, but the average is about 40° F. This water is gradually raised to 180° F. in three-quarters of an hour, and by that time the goods are dyed. Most dyers who are skillful at their trade put just sufficient dye or coloring matter into the bath to exhaust it in three-quarters of an hour and at a temperature of 180° F. The lower the temperature is kept in dyeing the more level and evenly the color transfers itself to the cotton.

These remarks and experiments refer more particularly to the dyeing of printed goods where whites have to be kept pure and unstained. In substantive or plain shade dyeing many dyers raise their dye liquors to the boil and use what is called a standing bath, that is, after a first dyeing is accomplished they remove the cloth, rinse and wash it, and without wasting the liquor the bath contains refill it and boil the cloth in this vat by adding fresh dyestuff and chemicals for three-quarters of an hour. It would be very difficult to determine exactly how much steam is required for this process; it certainly would be less, but for testing purposes the other test I have given you is the most trustworthy. Expert.

Cyrus (764) in your November issue asks what seems to be a foolish question, but it is of the greatest significance to every one interested in cost and production in the modern steam plant used in connection with the dyeing department. It is a question that interests not only the dyer, but also the treasurer who buys the coal, the engineer who supervises the making of the steam, the master mechanic who does the piping, and the dyer who does the dyeing. In this seemingly foolish question there are involved many others relating to the steam plant as well as the dye house. To begin with, What kind of coal is the engineer to work with? Is he getting coal of a good quality, or coal that is filled with dirt and other non-combustible materials? Has he an economical steam making plant? Are the boilers up to date? Are economizers and condensers used to give the highest economy and efficiency or is he compelled to take water in winter that is from 34° to 40° and in summer at 70° F.? It makes a great difference whether the water enters the boilers at 40°, which

it does in some plants, or at a boil or very near that, as it does in other plants where economizers are in use.

Assuming that there is a good steam plant with all the attachments for giving the highest possible efficiency, that the coal is of good steam making quality, the question arises, How many pounds of water is he evaporating with one pound of coal? Is it 6 or 7, or, as has been claimed, 12 or 14?

Assuming that the engineer has made the steam at the lowest possible cost, let us examine the steam piping. Is it carried to the dyehouse in the most direct way? Is the piping properly covered with asbestos, or is it carried for long distances through cold rooms and sometimes out of doors through pipes without any covering whatever, thus giving many square feet of cooling surface, and condensing the steam into water before "Cyrus" has any chance to use it? Again, are the joints and fittings leaky? Are the valve stems packed as they should be, or are they hissing and wasting clouds of steam? After reaching the dyehouse is "Cyrus" using the greatest possible care and economy in its use, or is he careless or at least indifferent about the amount of steam he is using for his yard of cloth? Does he allow the dyehouse hands to boil the kettle longer and harder than they should, and thus waste steam when a slow spring boil would effect his purpose? Are the numerous valves leaking water and steam? Are the steam joints properly packed to prevent waste, or are they shooting out clouds of vapor that was once steam and now has returned to water without having in any way assisted "Cyrus" in dyeing his yard of cloth? Even if the pipes are not covered and the valves and fittings not in good condition, he may not be to blame. It is sometimes the fault of the careless or lazy fellow who does the steam fitting. "Cyrus" should insist, however, that as far as possible his steam plant be kept in good condition. It will not only decrease the cost of dyeing to the mill, but it will add to the general appearance and cleanliness of the dyehouse.

Let us consider "Cyrus" himself in relation to this important and many-sided question. What is he doing with the steam? Is he boiling, say, 400 gallons of water to dye a certain number of yards of cloth when 200 or even 100 gallons of water would be sufficient? Is he using the shortest and best method for dyeing each color? Is he boiling his dye bath two hours when one hour or even half an hour would do as well?

The many factors involved make this a very interesting question. As we watch the coal piles dwindle; as we look along the hundreds of feet of naked steam pipes exposed to the chilly air; when we listen to the noisy wasting leaks from joints and valves; when we see the waste of steam by its many users, well may we ask, not as "Cyrus" did, "How many pounds of steam will it take to dye a yard of cloth?" but how much less would it cost if each one having control of the making and using of steam would insist on the proper condition of the steam plant and the economical use of the steam as it travels from the boiler to "Cyrus" and his yard of cloth. Baumwolle.

Dyeing Artificial Silk.

Editor Textile World Record:

Can you give me any information on dyeing artificial silk? Carlson (805).

An article on this subject will be found in another part of this issue.

Soap for Silk Throwsters.

Editor Textile World Record:

1. Would a water softened by soft soap (that is, one in which the effect of the lime is neutralized by adding soft soap until a permanent lather remains on top of the water) give the same results to a silk throwster in soaking silk as rain water or condensed steam? If not, why not?

2. Should the solution used in soaking silk be a fixed one, that is, should the emulsion be made with sufficient borax to prevent the oil rising to the top after standing, say, twenty-four hours?

3. What do you consider the proper amount of borax to use with, say, 3 per cent. of soap and 3 per cent. of neat's-foot oil, and should more borax be used with neat's-foot oil than with olive oil? Should the amount of borax be decreased in a solution of, say, 3 per cent. of oil and 6 per cent. of soap?

4. Is a soap containing an excess of alkali suitable for a throwster? If not, why not? If not, what test should be used to determine when it should be discarded?

5. Would a higher per cent. of oil neutralize the effect of a soap containing an excess of alkali and answer the same purpose as a neutral soap, and thus make it possible to use a cheaper grade of soap? Filature (702).

1. A water softened with soft soap will give the same results in soaking silk as rain water or condensed water, provided enough soap is used to neutralize thoroughly the effect of the lime and at the same time have a good permanent body of lather.

2. A solution used in soaking silk can be used as a standing bath when the emulsion is made with sufficient borax to keep the bath in solution, although it is not advisable to run the bath for too great a length of time.

3. With 3 per cent. of soap and 3 per cent. of neat's-foot oil, 5 per cent. of borax should be used, and I should use the same amount with neat's-foot oil as with olive oil. The amount of borax should be decreased about one per cent. when using double the amount of soap, that is, 6 per cent. of soap and 3 per cent. of oil.

4. A soap containing a large excess of alkali is not suitable for a throwster, as it makes it of too harsh a nature.

5. A higher per cent. of oil will neutralize the effect of a soap containing too large an amount of alkali, and so make it possible to use a cheaper grade of soap than otherwise. Hartford.

Setting the Eccentric on a Loom.

Editor Textile World Record:

How should the eccentric be set on a Crompton-Thayer loom where it is on the upright shaft? What is the advantage of having the eccentric in that position? Maryland (815).

The eccentric on a Crompton & Knowles or Crompton-Thayer loom should be set so that the shed will not open or close on the quick motion, in order to favor the yarn. It must not open with a jerk. It is better to set the eccentric so that the shed will close on the slow motion, not only to help the yarns, but to favor the box motion. If the shed is closing on the fast motion and the shuttles are running on the skip box, it is liable to throw out the shuttle on account of all the strain coming on the head motion on the wind up of the fast speed, giving the boxes a chance to rebound. It also shortens the life of the harness straps, harness frames and heddles. If the filling kinks and the pattern chain does not call for skip boxes it is advisable to have the eccentric close on the fast motion. In all other cases the shed should close on the slow motion. Greenwich.

Testing Merino Yarns

Editor Textile World Record:

Please give me a formula for testing merino yarns to find the proportion of cotton and wool. Hilton (788).

The proportions of cotton and wool in mixed fabrics are easily determined by weighing a sample before and after boiling out in a solution of caustic potash or soda, boiling it for about fifteen minutes and then drying. The solution should contain about 10 per cent. by weight of the caustic, that is to say, 90 per cent. of water and 10 per cent. of caustic alkali. The wool is dissolved by the alkali and the cotton is but little affected. Consequently the residue represents the amount of cotton in the original sample. It is well to add about 5 per cent. of the weight of the residue to allow for the loss of weight of the cotton in the process.

Absorbent Cloth.

Editor Textile World Record:

We are manufacturing a pile fabric of cotton. We use 2/20s and 3/24s grey cotton yarn. After weaving, the goods are bleached by the open process. We have no trouble in securing a perfectly white bleach, but it is very important that our goods be thoroughly and quickly absorbent when finished, and on this latter point we have been unable to secure uniform and satisfactory results.

We enclose a finished sample which we believe will absorb about as we wish to have the goods. It may be tested by dropping it, pile side down, on a dish of water; if it quickly absorbs the water and is saturated within 30 seconds (possibly 40) it is all right. We have not tested it as it is supposed to be right before it is finished.

In explanation of what may seem contradictory statements we wish to say that we have been, and are, able to make the goods absorbent. The trouble is that we frequently find it necessary to treat the cloth a second or even a third time after it comes from the bleach and has been dried, before it will absorb properly. These supplemental treatments are simply a plain water or caustic soda boiling and they will do the business. What we want to learn is how to be sure that the goods are absorbent before they are ready for finishing.

We have found it a very perplexing problem inasmuch as we will treat one lot in a certain manner and it will come out right; perhaps the next lot, treated in exactly the same manner (by this we mean that everything is tested and weighed, same time in boil, chemic and sour) will be about as absorbent as a cork and require the supplemental treatment.

We have made many inquiries and many persons have told us just how to do it, but practical results have proven their theories incorrect. Can you give us any information that will enable us to secure the results desired?

Lockhaven (817).

We shall be glad to hear from any of our readers in regard to the remedy for this difficulty.

Electricity on Cards.

Editor Textile World Record:

I would like some information regarding the running of low waste and linters on lappers and cards, both raw and bleached stock. We have trouble with electricity in winter when running the bleached stock on the cards.

Parkman (808).

We are running on low waste and linters and have had no trouble with electricity. If we did I should run a perforated steam pipe under the outlet of the picker and have small jets of steam blow

through the stock as it comes out. This is the best device I know of for either cotton or wool. Sometimes perforated pipes are put under the condenser. Parker.

The Longest Harness Chain.

Editor Textile World Record:

We are running a harness chain with 1,440 bars, weaving carriage robes with 24 harness; the filling chain also has 1,440 bars. Our boss weaver thinks this is the longest chain that has ever been run. We would like you to publish this in your magazine and ask any of your readers to respond who may know of a longer chain.

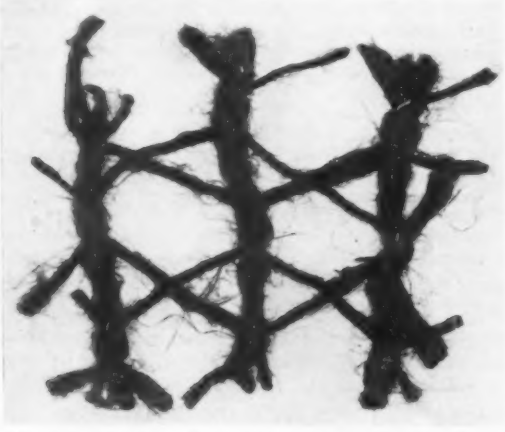
Cherry Valley (821).

Crochet Work.

Editor Textile World Record:

Enclosed is a sample of crochet work made on a German machine. Can you give me any information on the setting of the machines and how to design for them? Barton (799).

Inquiries among builders of braid and knitting machinery fail to elicit the information desired.



We shall be glad to hear from any of our readers who may be informed on this branch of manufacturing.

Machinery on Worsteds and Woolens.

Editor Textile World Record:

Can you advise us what proportion of the textile machinery in the country is running on worsteds, and what on carded woolen cassimeres?

Gordon (763).

There is no way to determine even approximately what proportion of the textile machinery of the country is running on worsteds and what on woolen cassimeres. As far as dressing and weaving machinery is concerned the same machinery can be used in the manufacture of both grades of goods. Mills making both grades have a constantly varying amount of machinery on each, and we doubt if the owner of the mill could determine the proportions for his own mill. The amount of worsted preparing and spinning machinery in the country is known, but the production of such machinery, as compared with the woolen spinning machinery, cannot be determined as there are no statistics available.

Woven and Finished Widths of Woolen Goods.

Editor Textile World Record:

Can you give me a rule for calculating the right difference between the cloth width and reed width for the common run of woolen fabrics? By cloth width I mean as it leaves the loom. Also the finished width as it reaches the buyer.

Plymouth (800).

There is no rule by which the proper woven width of a fabric can be calculated, Experience is the only guide. The difference between the woven and finished width depends altogether on the class of goods and the finish required. The wider the goods are set in the loom the more must they be fulled to bring them to the required width.

Chafing of Piece Dyed Silk Goods.

Editor Textile World Record:

Can you give me any information regarding the causes and remedies of chafing of piece-dyed silk goods, particularly crepe de chines?

Western (777).

This defect results either from the goods containing a quantity of "dead" silk, which behaves in the dye bath similar to the kemp in wool, or from faulty dyeing. Goods of this character, and in fact all silk goods, should be dyed in a broken soap bath, that is, after the goods have had the final boiling off the soap bath should be broken with acetic acid and the goods dyed in the bath with the necessary quantities of dyestuff, exhausting it if necessary with a stronger acid after the goods have been boiled for one-half hour or longer. Unless the dye bath exhausts under this treatment it is always advantageous to shut off steam and allow the goods to continue running at a temperature of about 150° F.

In the sample submitted the dye liquor has not penetrated the goods thoroughly, which shows that the dyeing was carried on too rapidly. This can be overcome by dyeing in the broken soap bath mentioned above, and adjusting the quantity of acid in such manner that the dyeing will proceed very slowly, thus securing better penetration of the goods. If the silk contains dead fibre then it is a much more difficult proposition. Silks should not be boiled in a strong alkali as this has a tendency to make them feel rough and harsh.

Jameson.

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 236 to 253. Also Buyers' Index.

THE KNIT GOODS SITUATION.

The last month has not been productive of any large volume of business on knit underwear at first hands. The early orders were heavy, buyers anticipating their wants more freely than usual, which left less to do in the month of January than in former years.

The weather has not been all that could be desired for the cleaning up of stocks in jobbers' and retailers' hands, and the salesmen who have been out soliciting business from retailers for fall are already complaining at the smallness of the orders they are receiving. They are told that owing to the unfavorable weather, retailers are quite sure to carry over considerable stock and while this is the case, he either passes the line for the present or places a small filling-in order.

There is nothing new in the ladies' ribbed goods market, except that there has been considerable talk of a 6-pound Southern garment having been offered for early delivery at $1.85. This, however, is not taken very seriously by many buyers, as so many of them have decided that they will not buy Southern made merchandise when Northern goods can be had at anywhere near the same prices.

All manufacturers of ladies' combed yarn goods are in a very comfortable position in regard to their orders and say they have enough to keep them busy until November.

The Avalon Knitwear Company have adopted a list price for their line of Setsnug underwear, below which jobbers are not to offer the line under penalty of not getting the goods delivered. These people insist upon jobbers getting $4.25 for their cotton vests and pants on ordinary sizes and $4.50 for extra sizes, and $8.50 and $9.00 for their cotton combination suits. The terms on all the above are 2/10 with November first dating. The effect that this will have will be watched with considerable interest, but it is believed by many that the prices have been set too high and that as most of this class of merchandise has been sold in the last two seasons at $4.00 net, it will result in the jobbers having the $4.25 lines left on their hands.

The sale of ladies' white underwear is increasing rapidly and many manufacturers of cotton goods have increased their bleaching facilities. Manufacturers of wool and worsted ribbed goods state their orders on white are as large this year as on grey and naturals.

The tendency is all toward fine stitches in all lines of cotton and worsted ribbed vests, pants and suits, and today very few tuck stitches are wanted except those made of carded yarn, and as for trimmings and edgings, the small neat patterns have the preference. An imitation of hand crochet around the neck with double row of small shells down the front makes a very desirable finish on any of this class of goods.

There is nothing new in men's fleeced goods business of any note. It is reported that a number of jobbers are letting out surplus stocks of 1906 goods at very low prices, but of course this has no bearing on 1907 lines at first hands. Anything in fleeced goods lower than $3.75 is scarce and it looks as though there are good prospects now for an advance of about 12 1/2 cents a dozen for those manufacturers who are in a position to accept any further business.

Men's and women's flat wool goods are fairly well sold up and while there has been no decline in the prices of raw materials it has been remarked in various quarters that the early samples sent out by manufacturers of 1907 lines look and feel better than 1906 goods at the same prices. Possibly there has been a new trick learned in manipulation.

So great has been the demand for the goods of the Cooper Mfg. Co. during the last three years that a number of other makers have gone into the manufacture of similar lines, until we now have men's ribbed goods business looked after by several

others, notably the Bradford Knitting Co., Athens Knitting Co., Taunton Knitting Co., Harmony Knitting Co. and Wright's Health Underwear Co., who are all making derby ribbed goods.

HOSIERY.

The situation in the hosiery end of the market is about all that could be desired and is better than the mild weather of the last month would seem to warrant. A number of buyers have been in the market recently, but their mission has been principally to give details on orders given to road men in the months of December and January and also to hasten along deliveries of spring lines.

Upon going over the matter carefully with some hosiery salesmen, it is apparent that there is yet considerable business to come forward on fall lines and it looks as if those buyers who have put off the matter until the present writing will find it difficult to get their orders placed satisfactorily in the matter of prices and dates of delivery, as most of the leading lines are sold up to August and in some cases for September and October delivery.

The last season has brought forth considerable complaint in regard to poor wearing qualities of the lower priced wool hosiery. Goods that were made to retail at 25 cents have proven to be very unsatisfactory. Nevertheless, this same class of goods has been practically sold up for the year of 1907. Fifty-cent cashmeres have also come in for their share of criticism, but we fail to see how better values can be given until there comes a radical change in the price of wool and worsteds, and if in the meantime people want better wearing hosiery it will be necessary for them to buy heavy cotton goods for winter wear.

In the cotton and silk lines shown for fall, the colorings are about the same as in the spring lines. Blue, tan and wine promise to be in good demand. Dark green will also be called for. Navy will be the first choice with limited calls for old blue and royal. The golden shades will be the proper ones in tans, and in wines the first choice will be Bordeaux. Bronze and myrtle shades of green will probably be fairly good.

CHEMNITZ REPORT.

The market is now in the principal shipping season, and during the last few weeks a great many goods have left the district. A great many complaints could also be heard that many cases had to lay in the ports for a week or two before they were put on board, as the shipping companies in Hamburg and Bremen were unable to handle the immense quantities of freight as promptly as usual, in spite of the fact that they put on extra steamers.

The situation of the market has not changed much during the last month. Fine gauge goods and split foot hose are just as scarce as ever and cannot be had for delivery before next summer. While some of the makers were careful enough not to accept large orders for delivery next summer and fall, others again are pretty well filled up for the entire season.

Trade in lace hose is still quiet in the lower grades of goods. The higher priced fine gauge numbers are still selling and the makers turning out such goods have plenty of orders on hand, but on the low end the work for the machines is becoming scarce, and unless a rather sudden change takes place these articles are liable to drop in price. That is why importers are holding back, as no doubt the article will sell again if it can be offered at the old popular prices.

In fancy hosiery no changes are reported. This time of the year hardly ever anything new turns up, as the buyers will not return for four to six weeks and then the new styles will be shown. It is expected that striped hose will sell better for next year than they have for a number of seasons, but up to now nothing is known of the character and colorings that will be taken.

Trade in gloves is still as lively as ever. Shipments are late and manufacturers are unable to rush out orders as in other years, as the working people are very independent this year, knowing well that the manufacturers need them the worst way and have to stand a great deal more than they would under regular circumstances.

In fall gloves the market is filling up fast with orders and the limited quantities in cashmerette and suede gloves which can be

made this season will soon be sold up. A large number of the best makers have already sold all they can possibly turn out, therefore buyers should not delay ordering, as they are liable to get left if they come too late.

Prices on knit gloves and ringwoods have gone up again during the last two weeks, as wool is again higher in price and will go up still more, so that lower prices for woolen gloves are not likely.

Cashmerette gloves have also been advanced in price, as the yarns are now costing more. Buyers who have placed their orders early this year will find this largely to their advantage, as now orders cannot possibly be placed at the prices that could be obtained four weeks ago.

THE MANUFACTURE OF BRAID.

BY NICOLAS REISER.
(In Handbuch der Weberei.)

(Translated from the German.)

(Continued from January.)

There are three classes of braid machines to correspond to the three kinds of braid already mentioned:

1. Machine for flat braid. All the bobbins are moved on an enclosed track, part of them passing behind the others, and part crossing.

2. Machines for round braid. The bobbins form several groups, the track of each crossing the other bobbins. The bobbins of each group do not interlace with each other.

3. Machine for lace braid. The bobbins are arranged in groups and pass at intervals from one group to another in order to give the lace effect desired.

In all braid machines the number of working wings must be at least twice the number of spindles in order to allow the spindles to be passed from one wing wheel to another. Not more than one single thread can be drawn from a bobbin. The term thread as used in this article will refer to all the strands drawn from a single bobbin.

Machines for flat braid consist of a number of wing wheels attached alongside each other. Each spindle is carried by a wing wheel along the groove in the upper plate till a complete revolution is made, when it is delivered to the adjacent wheel, which carries it in the opposite direction, till it is in turn delivered to the next wheel, thus being carried in an undulating path. At each passage from one wheel to another the spindle crosses the path of the opposite spindle and thus the threads are interlaced. To prevent a collision an empty wing is brought into position at the crossing point so that one

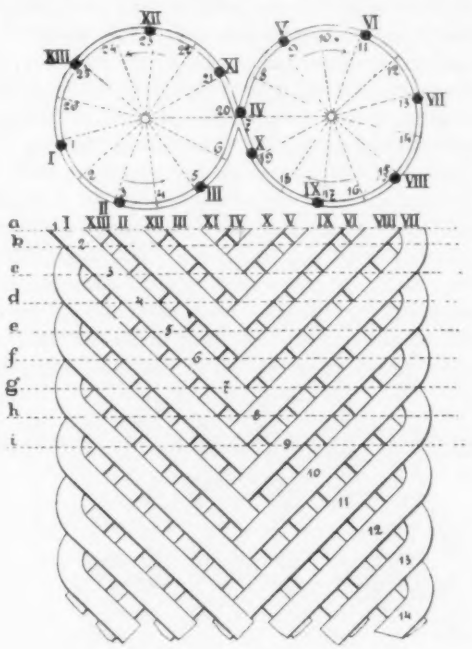


FIG. 7.

spindle passes behind two opposite spindles. For this purpose the end wheel is provided with an uneven number and the intermediate wheel an even number of wings. To make a tight edge on the braid the end wheels generally have more wings than the intermediate wheels The exception to this rule is found in the "President" braid machine, which has two 5-wing end wheels and one 6-wing intermediate wheel. The best braid is obtained when the end wheel has one more wing than the intermediate wheel. A regular appearance is given to the braid when each thread passes alternately under and over an equal number of threads; that

is, when the intermediate wheels have the same number of wings and when there is an even number of wing wheels. A regular braid machine, consequently, has an even number of intermediate wheels, each of which has the same even number of wings, with two end wing wheels each with one more wing than the intermediate wheel.

The braid is called one, two, three, or more ply according as each intermediate wheel has 2, 4, 6 or more wings. Designating the number of wheels in the regular braid machine by a, the number of wings on the intermediate wheels by b, the number of wings in the end wheels by b + 1, the total number of wings will be ab + 2. Accordingly the number of spindles will be (ab ÷ 2) + 1; a and b must represent even numbers. As in 1, 2, 3, or more ply machines, b = 2, 4, 6, etc., so the sum of the spindles will be a + 1, 2a + 1, 3a + 1, etc. If a = 2, then there will be no intermediate wheels and only two end wheels. Goods made on this, the smallest number of wheels, is called heart braid from the fact that the threads

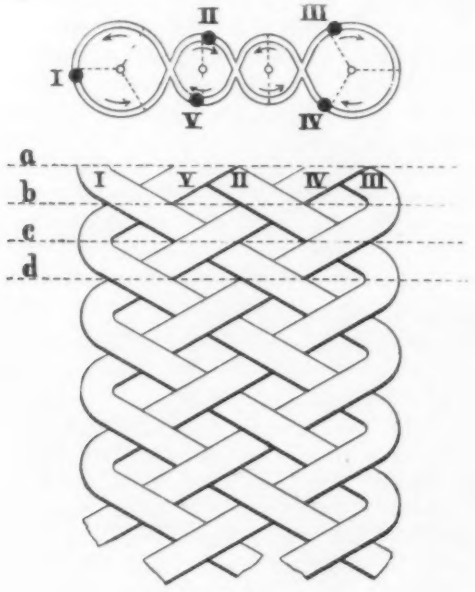


FIG 8.

in the middle of the braid intersect and form a heart-shaped figure. It is also called soutache braid.

As braid cannot be formed with two threads, the braid machine with two wing wheels carrying two spindles each produces the simplest braided fabric. The soutache machines are also run with 5, 7, 9, or more spindles. As the number of threads increases, however, the fabric becomes sleazy because too many threads are run together without intersections. For this reason not more than 21 spindles should be used on the

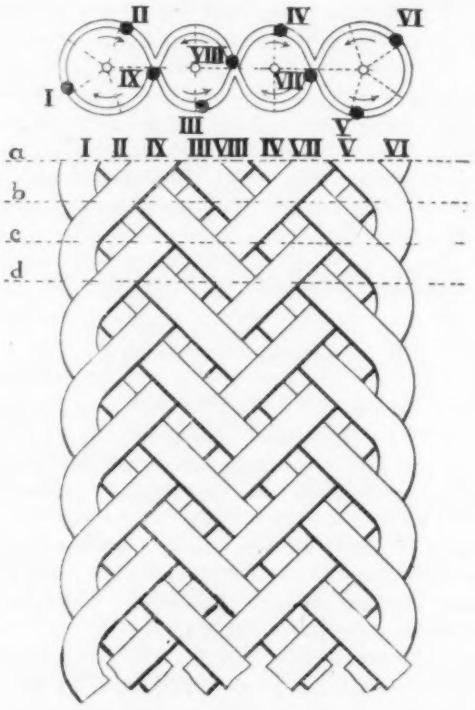


FIG. 9.

soutache machine. As the spindles are hollow it is possible to run stuffing threads into soutache braid similar to the warp of a woven fabric. When this is done each side of the braid is rounded out. A great deal of soutache braid is made in France and Spain and used in the manufacture of sandals. This braid is also made of the cocoa fibre and is used for mats.

Fig. 7 shows the spindles and the grooves of a 13-spindle soutache machine, also the resulting braid. The black circles indicate the spindles numbered from 1 to XIII. The dotted lines radiating from the center indicate the wings of the driving wheels and are numbered 1 to 26. The lines

a, b, c, etc., indicate the position of the threads when their respective spindles have been moved forward by one wing in the direction of the arrow. The positions, 1 to 14,

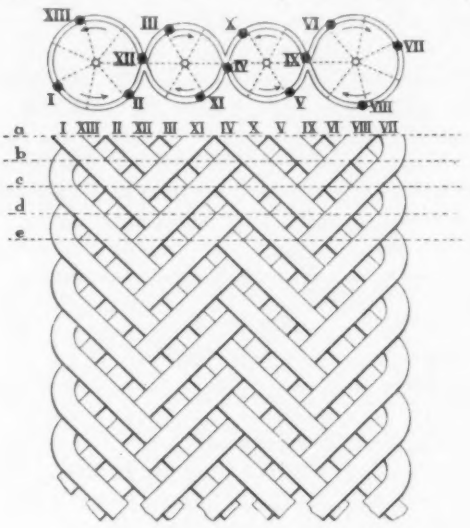


FIG. 10.

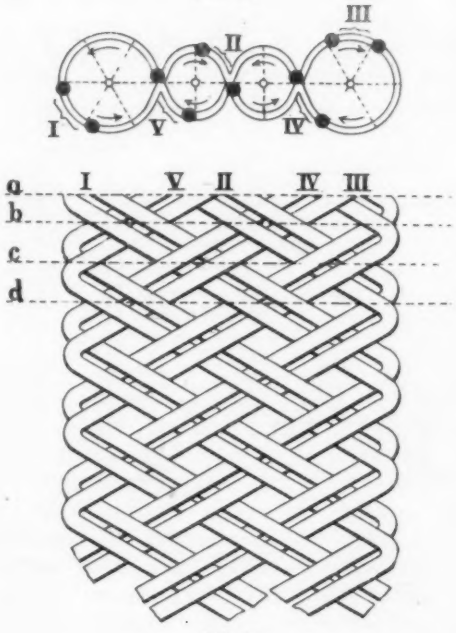


FIG. 11.

of the spindle, 1, indicate one revolution of the wing wheel for that thread. As shown in the illustration each thread runs under 6 and over 6 threads making what is called six-leaf braid. To make the illustration more clear the positions of the other threads are not numbered as in the case of thread 1.

The true braid machine is made with intermediate wheels and usually for one, two or three-leaf braid. Figs. 8, 9 and 10 show the draft for three braid machines with 5, 9, and 13 threads respectively. Single leaf machines are seldom used; usually the machines are two-leaf. Two-leaf braid machines can be easily adjusted for the production of single leaf braid by substituting a 6-wing wheel for the 5-wing wheel and changing the end wheels to correspond. The single leaf machine results from grouping the wings in pairs, the end wheels having three pairs of wings instead of three wings, and the intermediate wheels having two pairs of wings instead of two wings. In such a case the spindles are numbered in pairs instead of singles. Single leaf braid is usually made with ply yarn on account of the improved appearance that results therefrom. Fig. 11 shows a braid machine with five pairs of spindles, also the resulting single braid.

(To be continued.)

HOSIERY CONVENTION AND EXHIBITION.

Very satisfactory progress is being made in preparing for the convention of the National Association of Hosiery Manufacturers to be held at Philadelphia during the week beginning May 13. In connection with the convention is to be held an exhibition in the building at the corner of Eighth and Chestnut Streets. Reservations have already been made for a considerable portion of the 15,000 square feet of floor space, the following being a partial list of those who have arranged for exhibits:

Jacob K. Altemus Machinery Co., Philadelphia, Pa.; American Pulley Co., Philadelphia, Pa.; S. F. Bowser & Co., Ft. Wayne, Ind.; Dennison Mfg. Co., Philadelphia, Pa.; Foster Machine Co., Westfield, Mass.; Geisenheimer & Co., New York, N. Y.; E. F. Houghton & Co., Philadelphia, Pa.; E. Jenckes Mfg. Co., Pawtucket, R. I.; Kaumograph Co., New York, N. Y.; Manufacturers' Supplies Co., Philadelphia, Pa.; National

Automatic Knitter Co., Philadelphia, Pa.; Nevershrink Process (Chas. E. Heyer), Philadelphia, Pa.; Philadelphia Drying Machine Co., Philadelphia, Pa.; Roessler & Hasslacher Chemical Co., New York, N. Y.; Salvador Transfer Co., New York, N. Y.; Smith, Drum & Co., Philadelphia, Pa.; Wm. Steele & Sons Co., Philadelphia, Pa.; Wilfred Wells, Philadelphia, Pa.; O. F. Zurn Co., Philadelphia, Pa.

It is the intention of the managers to make the convention a strictly business affair. The exhibition will afford an opportunity for delegates and visitors to meet and discuss matters of mutual interest. The charge for floor space has been placed at 50 cents a square foot, and those desiring to make exhibits will do well to lose no time in perfecting final arrangements.

TRACING KNIT GOODS THROUGH THE DYEHOUSE AND FINISHING ROOMS.

BY FOREMAN.

These few words in regard to tracing goods through the dyehouse and finishing room are submitted in the hope that they may aid knitters to find out "where they are at." Below will be found a method that has given satisfactory results; it enables one to know at any time just where the goods are. Before sending the goods to the dyehouse, each style is distinguished by a letter or number and is sent down in lots of from 50 to 100 pounds, or in whatever quantity is most convenient.

We will begin with style A, size 9, of which it takes 45 dozen to weigh 100 pounds. The first two lots we will enter in the dye book in the following order:

Lot No.	No. Doz.	Style	Size	Weight
1	45	A	9	100
2	50	B	7	100

The day's work is recorded in this way: The lot numbers begin with No. 1 and continue in numerical order from day to day until No. 100, or any other number that may be selected, is reached. A new series should not be begun until No. 1 is finished and out of the way, so that two lots of the same number may not be in the room at the same time. Each lot will be accompanied by a ticket similar to that shown in Fig. 1. This ticket corresponds with lot No. 1 on the dye book, and is kept with the goods until they get to the boarder.

After reaching the dyehouse, the first process, if the goods are to be dyed an oxydized fast black, is to put them through the tom-tom; here the ticket belonging to the lot is hung on the tom-tom in a small piece of board split part way through, as shown in Fig. 2, the ticket being inserted in the cut made by the saw. This prevents the tickets from being spattered by the dyestuff.

Date	Mar. 12
Lot No.	1
No. Doz.	45
Style	a
Size	9
Color	Black
Weight	100
Ins. No.	

FIG. 1.

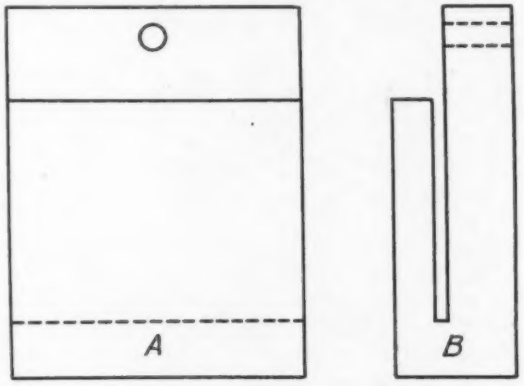


FIG. 2.

After being "tommed" the ticket holder containing the ticket is put on the lot, which is then ready for the oxydizing cages. When the goods are entered, the ticket holder with the ticket is hung on the cage containing the goods. The ticket then follows the goods to the aging room, and so on until the lot is ready for boarding, when the

ticket is taken from the case and sent with the lot to the boarder. The boarder's account must correspond with the ticket, which is then destroyed.

After the goods are boarded they are sent to the presser accompanied by the ticket shown in Fig. 3. This ticket follows the goods through all the other processes until they are packed. On reaching the packer the finishing ticket alone remains, as the other coupons have been detached during the various processes, each operative retaining her respective coupon, filling it out and retaining it for a memorandum by which she is paid.

Each operative is known by a number, and the coupon is filled out and detached in the manner following: After the goods are boarded, the boarder presents ticket, Fig. 1, with the lot boarded to the foreman, who gives him credit for the same. The foreman then fills out the first part of the ticket, Fig. 3, as shown, and gives the lot to the presser. After the goods are pressed, the presser's name or number is put on the ticket, the lot and quantity being entered to the credit of the presser on a book kept by the foreman. The lot with the ticket attached then goes to the pairer, who inspects and pairs the work, fills out the pairer's coupon and detaches it, at the same time putting her name or number in the proper place on the main ticket, as designated by the words "Paired by," Fig. 3.

The goods are then examined by the inspector, who picks out several dozen from different parts of the lot for this purpose, and marks the result of the inspection on the main ticket, Fig. 3, under "Final Inspection."

The goods are now given to the stamper who stamps them and fills out and detaches the stamper's coupon, after putting her name or number on the main ticket. The lot then passes to the boxer who boxes them and fills out and detaches her coupon after putting her name or number on the main ticket. The boxer's coupon being the last, the main ticket is retained with the lot for future reference. By filing the finishing ticket and having the boxer's stamp on the bottom of each box, giving the date and number of the

Finishing Ticket

Lot No. 1 Date Mar 12, 1902.
Style No. a
Color Black

Size	4	4½	5	5½	6	6½	7	7½
No. Doz.								
Size	8	8½	9	9½	10	10½	11	11½
No. Doz			45					

Boarded by John Jones
Pressed by Martha Smith
Paired by 45
Mended by 21
Stamped by 10
Boxed by 15
Bundled by
Inspector's No. 27

Final Inspection

No. Dozen Inspected 10
Single Knee
Menders 2
Seconds none
Repair "
Repress "

Pairer's Coupon

Lot No. 1 Date Mar 12 1902.
Style No. a Name 45
Color Black
Size 9 No. Doz. 45

Pd 1st	M	Md.	Repress	Redye	Odd
42-8	1-10	-10	-6	-3	-3

Stampers' Coupon

Lot No. 1 Date Mar 12 1902
Style No. a Name 10
Color Black
Size 9 No. Doz. 42-8

Boxer's Coupon

Lot No. 1 Date Mar 12 1902.
Style No. a Name 15
Color Black
Size 9 Doz. 42 ½ Doz.

FIG. 3.

lot, any complaints from purchasers of the goods can be readily traced to the person responsible for the defects. This will be found very convenient, as carelessness on the part of the help may be easily detected and remedied.

Opposite "M" (meaning mender), "1/10" means 1 dozen and ten stockings. "Md." means mended; that is, the goods were mended before going to the dyehouse.

Blank Forms for a Knitting Mill.

Editor Textile World Record:

We are just starting in the knitting business and would like to know what kind of blank forms are used in a knitting mill to be attached to the goods as they go through the different departments. Can you give us any information on this point?

Hartford (810).

In another part of this issue is an article describing the tags used for tracing knit goods through the dye house and finishing room, reprinted from the Textile World of April, 1902. In the Textile World Record for February, 1906, and January, 1907, are other articles on how to keep track of the work of a knitting mill as it passes through the various processes.

Competition in Selling Goods.

Editor Textile World Record:

I manufacture a line of men's low priced ribbed underwear and am in competition with two mills making the same line of goods, which they retail at 25 cents a garment. I do not understand how they can sell their product so cheap; they undersell me 15 cents a dozen. I manufacture part of my yarn; one of my competitors has to buy all of his yarn. Is there any way I can find out what it costs them to make the garment in question?

Pontiac (807).

This inquiry regarding competition brings up a very interesting subject for discussion. "Pontiac's competitors are the only people who can determine the cost of their goods and they certainly will not tell an outsider. Every manufacturer frequently meets these cases where a competing mill is apparently selling goods below the cost of manufacture. There are various explanations, such as these:

1. The competitor may not be paying his bills.

2. He may be a better merchant or have superior facilities for manufacturing.

3. His financial condition may be such as to lead him to sell his goods at slaughter prices in order to keep his mill running. This explanation, however, does not apply in these days when knitting mills find it comparatively easy to sell their product at remunerative prices.

4. He may not know how to calculate the cost of his product and is consequently selling it below cost, because he estimates the cost too low.

5. The manufacturer who suffers from the competition may not know how to determine the cost of his goods, and as a consequence has estimated the cost higher than he should and is putting too high a price on his product.

For years we have been trying to impress on our readers the importance of a correct system of estimating cost in textile mills and have tried to persuade manufacturers that it is for the benefit of each one to publish all he knows about the general system of estimating cost in order that his competitor may not sell below cost.

Stockton Borton, Sewing Machine Inventor.

By the death of Stockton Borton on January 7, 1907, the sewing machine industry suffered a loss in a man to whom it owes a huge debt, as it is probable that but for his inventive genius and mechanical skill those manufacturers who are large users of sewing machines would be unable to turn out the enormous product in their respective lines which the growing trade of the world requires. Manufacturing in many lines has been made easier both for the employer and the employe by means of Borton's numerous inventions during the last quarter of a century.

Mr. Borton died at Lakewood, N. J., within a few days after returning from Jamaica, West Indies, where he had gone for his health in November last, in accordance with his custom of the past few years of spending his winters in warmer climates in an effort to recuperate his health which began to decline several years ago.

Mr. Borton was born in Moorestown, Burlington County, N. J., in 1853, his parents, both deceased, being Elwood and Anna Stockton Borton, members of the Society of Friends.

His early tastes led Mr. Borton to mechanical lines and he first started to work in Philadelphia, becoming interested in the sewing machine business in the '70s. In March, 1881, he was employed by the Willcox & Gibbs Sewing Machine Co., his immediate superior being Mr. Charles H. Willcox of that company. Mr. Borton could not have had a better instructor nor Mr. Willcox a more apt pupil, and together they worked, inventing, developing, and perfecting high speed sewing machines for use in manufacturing in many lines, achieving marked success, particularly with the well known high speed Lockstitch machine and Overlock machine, on which they obtained basic patents. At the time of his death Mr. Borton had been in the continuous service of the Willcox & Gibbs Co. for over twenty-five years.

Some of Mr. Borton's inventions remain today marvels of the sewing machine industry of the whole world. For the Willcox & Gibbs Sewing Machine Co. alone, he took out over fifty patents. His wonderful mechanical mind was specially di-

rected towards the invention and perfection of high class sewing machines capable of being operated at great speed, with the maximum productive power and consequent reduced cost to manufacturers.

One of his inventions had particular reference to the upholstery trade, namely, the Overlock lace edger. The Overlock machine was primarily designed for knit goods. It created a revolution in the underwear trade both here and abroad, furnishing a strong, elastic, trimmed seam, hem and overedge, with no raw edges. It was adopted by the United States, German and Belgian governments for finishing underwear for their respective armies and navies. It was soon found, however,

STOCKTON BORTON.

that the Overlock machine was of even greater service in the upholstery trade when it was organized to make a strong and sightly edge on lace curtains. It is estimated that since 1896, when the Overlock corded edge first appeared on the market, upwards of 250,000,000 pairs of lace curtains have been finished on this machine.

Most of Mr. Borton's work in connection with the Willcox & Gibbs machines invented by him had been for a number of years carried on at the Brown & Sharpe Mfg. Co.'s Works, Providence, R. I., where all their machines are made.

KNITTING MILL NEWS.

New Mills.

*Canada, Glencoe. The Glencoe Woolens Limited completed and start operations in the new mill built recently. This plant is equipped with 10 knitting and 7 sewing machines for making knitted goods and men's flat underwear. The capital stock is placed at $40,000; John S. Hogg is president of the company; Geo. A. Griffin, secretary and treasurer, and W. R. McCartney, superintendent. Plant is equipped with a dye house and operated by steam power. Product is sold direct.

Canada, Montreal. The Joyal Stocking Company has been incorporated and will operate a new plant at 432 Visitation St., making infants', misses', boys', ladies' hosiery, half-hose and lumbermen's socks, in plain or fancy knit, cotton, wool, cashmere, merino, super-lisle, linen, silkateen or silk. They will have an equipment of 30 knitting machines, 20 ribbers, 6 loopers, 2 sewing machines. Will buy yarns from 18 to 50 worsted, 24 to 60 cotton. Product will be sold direct. Peter N. Joyal is superintendent of the plant and Eugene Perreault, buyer.

*Massachusetts, Adams. Operations will start February 1st by J. O. & O. J. Purnell, making woolen shawls, crocheted shawls, automobile veils, mittens and neckwear, at this place. They will operate a plant equipped with one set woolen cards, 6 knitting machines, 3 crochet machines and 406 spindles. A dye plant has also been installed. Will sell direct. Plant is especially adapted to make custom yarn in pure white or black.

New York, Brooklyn. Florence Lang is operating a small knitting plant with 6 knitters and 4 sewing machines on cardigan jackets and sweaters under the name of Lang's Knitting Mills, at 1016 Gates Ave. Reports business as good.

*New York, Clinton. The Clinton Knitting Co. expects to have their new plant making children's fleeced underwear and boys' light weight shirts, in operation some time from Jan. 15th to Feb. 1st. This plant will be equipped with 11 latch needle knitting machines and 30 sewing machines. Product will be sold by W. K. Shelp, 346 Broadway, New York.

New York, New York. The Tiger Fleece Knitting Mills Co. has been organized with capital of $10,000. Alkow Kobrinctz is president, Israel Baker, treasurer and Jos. Solte, superintendent. Quarters have been leased at 59 Walker St., which they are fitting up and into which they are installing machinery for the manufacture of men's and children's fleece lined underwear. The plant, which will be in operation Jan. 15th, will contain 4 knitters, 2 ribbers, 1 winder, 1 40 in. napper and 16 sewing machines. Gas will be used as the motive power. They will buy 24/1, 6 backing and 22 facing cotton yarns and sell direct. M. Marcus is the buyer.

New York, New York. Chas. Zuenzer, 81 Reade St., is manufacturing chest protectors and suspensory bandages, using 12/2 woolen yarns in his operations and selling direct.

*North Carolina, Zebulon. The present address of the Zebulon Hosiery Mills is care T. J. Horton, president, Durham, N. C. A post office has not been established at the mills.

Ohio, Cincinnati. A new knitting mill has been started at 1903 Freeman Ave., as the Lavina Hosiery Mills, with C. Gooding, president and

manager. Plant is running with equipment of 10 knitting machines, 2 ribbers and one looper, making woolen and cotton half hose, using electric power. They buy cotton yarn, 8 to 40, woolen to 2/20. Do their own dyeing.

*Pennsylvania, Harrisburg. The Newville Knitting Co. of Newville will start operations in their branch mill at this place about March 1st. Plant will be equipped with 35 knitting machines and 75 sewing machines.

Pennsylvania, Philadelphia. A charter is about to be asked for the Bee Knitting Co., who have leased the first floor of the Bromley Mills at Jasper & York Sts. and in which they will manufacture women's, children's hose and men's half hose on 100 knitters, using cotton, woolen and worsted yarns. The company will have a capital of $25,000 with J. F. Lieberman, president and M. Leopold, treasurer. It is the expectation of this company to have its plant in operation within a few days.

Pennsylvania, Pottsville. Messrs. Scharadin & Kimmel have recently started a knitting mill here known as the Penn. Knitting Co. in which they manufacture women's cotton ribbed underwear. They are occupying the building in which the Globe Knitting Mills were formerly located.

Pennsylvania, Pottsville. One of the new mills recently started in this town is that operated by Fred. L. Miller and will be known as the Pottsville Knitting Mills. He will manufacture women's cotton ribbed vests and children's wrappers.

Pennsylvania, Bechtelsville. It is reported that a new knitting mill is to be erected in this town which will give employment to 100 hands.

Pennsylvania, Reading. Bernard B. Terry, 801 No. 11th Street, is making preparations for starting a hosiery plant.

*Wisconsin, Janesville. The new mill to be started at this place will be a branch of the Kalamazoo Knitting Co.'s plant at Milwaukee, and will be operated under that name. They will make seamless cotton hosiery.

Enlargements and Improvements.

Connecticut, Bristol. The Bristol Manufacturing Co. will start work at once on erection of a large power plant to take the place of one now in operation.

*Delaware, Wilmington. Work is nearing completion on the Delaware Hosiery Co.'s new mill. It is expected to have the plant ready to start operations by February 1st. This building, which is 138 by 60 feet, four stories, will have capacity of about 600 machines. Two of the floors will be used for knitting purposes and the other two for finishing, packing and storage. A complete power and electric light plant adjoins the mill.

Maine, Brunswick. The Brunswick Knitting Mill, of which E. W. Cobb is superintendent and T. C. Hunton, buyer, is building a new addition to the plant. This mill is operated on seamless half hose, with equipment of 18 knitting machines.

Massachusetts, Clinton. Henry Dio, who has been operating a small plant on Union Street, as the Clinton Hosiery Co., has rented a room in the Litchfield Worsted Co.'s mill and will install 10 machines for making hosiery. Will have capacity of about 40 dozen per day.

*Michigan, Ypsilanti. The Ypsilanti Underwear Co. has enlarged their mill at this place and removed machinery from the branch mill at Ann Arbor, which has been discontinued. They are continuing the mill at Detroit.

*New York, Amsterdam. The Blood Knitting Co. has about completed the erection of a five-story brick building, 176 by 42 feet, which will be connected with their present quarters by a bridge. The new building will be used for manufacturing same class of goods but will increase product to 2,000 men's ribbed underwear. It is hoped to have the machinery (ordered) installed within a month.

New York, Amsterdam. The Chalmers Knitting Co. will add to the capacity of the plant by taking one whole floor now used by the Blood Knitting Co., after the latter company's new building has been completed. It is stated that additional machinery will be added.

New York, Cohoes. The Troy Knitting Co. of Troy has purchased the J. H. Murphy Company's plant on Remsen St. and will start at once putting the plant in operation on cotton yarns. The capacity of the plant will be increased to 6,000 spindles. The knitting machinery will also be operated at this place as a branch mill.

*New York, Cohoes. We have been advised by the Troy Knitting Co., which purchased the J. H. Murphy Co.'s plant, that they have ordered enough machinery to double the capacity of the plant and will have between 6,000 and 7,000 spindles in operation some time in March. Propose using this as a yarn plant entirely, increasing the spinning machinery from time to time. The knitting machinery they expect to use in the Troy plant.

New York, Greenwich. The J. V. Palmer Co. is to increase the capital stock and will soon start a plant at this place for manufacturing yarns to be used in the knitting plant.

*New York, Little Falls. The Gilbert Mfg. Co. has about completed Mill No. 2, a six-story plant, brick, 200 by 75 feet. The first floor will be used for picking and garnetting; the second, wool carding; third, knitting; fourth, wool jacket spinning; fifth, cotton carding and sixth, cotton spinning.

New York, New York. W. F. Wohl, now the sole proprietor of the Berlin Knitting Mills, 20 Lispenard St., where he manufactures sweaters and golf vests on 8 knitters and 4 sewing machines, states that the plant will be removed to larger quarters and new machinery added. Business will be conducted on a larger scale.

New York, New York. Strassner & Bettman, proprietors of the Atlantic Knitting Mills, have removed to larger quarters at 26 and 28 Sullivan St., where they are getting ready to operate 15 knitters, 3 looms and 20 sewing machines on sweaters and golf vests. They sell direct.

*New York, St. Johnsville. The Lion Manufacturing Co., which has purchased the St. Johnsville

Knitting Co.'s plant, will operate same as Mill No. 2. They have installed 25 latch needle knitting and 50 sewing machines, also bleaching and dyeing equipment. John Haber is the new superintendent at the plant. The company will utilize the upper floor of the new addition for making paper boxes.

*New York, Syracuse. West Bros.' new mill is about completed and the company expects to move into same about March 1st. The building is 200 by 60 feet, four stories, brick, with separate buildings for dye house and boiler room. The mill is up to date in every way and will afford every convenience to their largely increasing business.

*Ohio, Piqua. The Union Underwear Co. is now located in their new five-story mill, 120 by 56 feet.

Pennsylvania, Hamburg. The Keystone Knitting Mills, which have been running on light weight women's Jersey ribbed underwear during the fall of 1906, started on the manufacture of heavy weights, on which they had a very successful season. The mills at this time are getting their machinery in condition for again starting up on light weights and in the future the plant will be run on both lines.

Pennsylvania, Hamburg. The Hamburg Hosiery Mills, manufacturers of men's seamless half hose in blacks and fancies, have recently enlarged their plant by putting in quite a number of new knitters of the Boss and Standard latest improved patterns. They are doing a good business selling the production direct.

Pennsylvania, Hamburg. The Hamburg Knitting Mills, manufacturers of ladies' ribbed underwear, report an active business. Have increased their manufacturing equipment by adding Nye & Tredick body machines and Wildman ribbers. The production is sold through New York.

Pennsylvania, Philadelphia. The Ideal Hosiery Mills, formerly located at 2821 Jasper St., where their plant was recently burnt out, have started up again in the Bromley Mills at Jasper & York Sts., where they are manufacturing ladies' and misses' hosiery as heretofore with plenty of orders on hand.

Pennsylvania, Schuylkill Haven. Meck & Co., manufacturers of women's ribbed underwear, are now located in their new mill. One of the novel features of this new building is that the knitting department is enclosed with glass partitions, making it absolutely dust proof.

Pennsylvania, Schuylkill Haven. The Union Knitting Mills, of which Reed & Leininger are the proprietors, are very busy manufacturing light weight summer underwear. The concern has recently been making great additions to their mill buildings, consisting of a two-story brick addition 40 by 40 and one-story addition to their bleach house, 32 by 80.

Pennsylvania, Sinking Springs. A. S. Hornberger has disposed of his interests at Sinking Springs to Lewis W. Gring and has added a line of hosiery machines to plant at Mohnton.

Tennessee, Athens. Contract has been let and work started on an addition to be built to the Athens Hosiery Mills.

*Tennessee, Knoxville. Repairs and changes are being made to the Southern Trunk Company's plant recently purchased by the Knoxville Knitting Mills, preparatory to their removing into same.

Wisconsin, Appleton. The Crescent Knitting Company's mill has been purchased by the Standard Knitting Co. of Milwaukee. The plant will be dismantled and machinery removed to Milwaukee.

Wisconsin, Appleton. The Appleton Knitting Co. has closed the plant for about ten days for purpose of making repairs on the water wheel.

Wisconsin, Kenosha. The Cooper Underwear Co. has been making several improvements to the plant with view to taking care of the increasing business. Charles S. Jacobs has recently been appointed superintendent of the plant.

Wisconsin, Kenosha. The Chicago-Rockford Hosiery Co. has completed the large addition to their plant, giving additional space for carding and spinning rooms and storage room. Three large machines have been added to the dye house equipment.

Utah, Brigham City. Additional machinery is to be installed in the knitting mill operated by John Anderson.

Utah, Provo. The Utah Knitting Company has removed their quarters to the second story in the Geo. Passey & Co.'s store.

Virginia, Roanoke. The Roanoke Knitting Mills Co. is reported establishing branch factories at Loray, Martinsville and Pulaski and will have a total of 450 machines at the various factories when additions have been made. This concern makes half hose and misses' ribbed hose.

Wisconsin, Depere. The Oneida Knitting Company is to increase the capital stock from $25,000 to $50,000.

*Wisconsin, Milwaukee. The Everwear Hosiery Company, reported recently to increase the capital stock to $20,000, will install additional machinery in the plant.

Mills Starting Up.

*Michigan. Owosso. We have been advised by the Burnett Knitting Company that their plant has been repaired and will be ready to start in a few days. Will need no new machinery.

Mills Shutting Down.

Michigan, Saranac. The Saranac Knitting Co.'s plant has been closed. It is not known when operations will be resumed.

Mississippi, Columbus. The Columbus Hosiery Mills, operated on cotton hose and half hose, are not in operation.

*New Jersey, Plainfield. The Watchung Knitting Mills, reported some time ago as contemplating removal to Cohoes, have gone out of business.

New York, Honeoye Falls. It is reported that the Ideal Knitting Co., are about to close out their business and shut down their plant. The

company was capitalized at $15,000, with Jas. H. Barnard, president; Edw. Brooks, treasurer and Geo. T. Nuttall, superintendent. Manufactured ladies' and men's double sole goods on 100 knitters and 2 sewing machines.

New York, New York. The Union Knitting Mills, 625 Tenth Ave., manufacturing knit underwear, has discontinued operations.

Ohio, Milan. The Milan Knitting Mill, operated by John Brown, has been closed permanently.

Virginia, Manchester. The Shields Hosiery Co.'s plant is not running and the property is in the hands of E. Shields. It is hoped that the mill will be started some time this year.

Facts and Gossip.

New York, Amsterdam. The Brookside Knitting Mills, Henry G. Edmunds, proprietor, were recently burned to the ground. Plant was equipped with 16 knitting and 5 sewing machines, for making woolen gloves. Mr. Edmunds carried about $1,700 insurance on his stock and machinery, but claims that this will not cover his loss, the estimated damage being between $3,000 and $4,000. The building is covered by insurance.

Philadelphia, Pa. A recent fire in the building in which the American Knitting Mills, manufacturers of sweaters, blouses, etc., owned by David Block, and Carl J. Moritz, manufacturer of trimming, embroideries, etc., almost entirely destroyed both plants. The loss is estimated as being very heavy.

*Delaware, Smyrna. We have been advised by Wm. M. Hope, receiver for the Bitzer Hosiery Co., that the plant will probably be operated for a year at least, but details have not yet been settled.

Michigan, St. Joseph. Cooper, Wells & Co. are installing a water softener which has a capacity of 60,000 gallons of soft water per day, for use in connection with their dye house.

*Minnesota, Mankato. The Midland Knit Goods Co. has been reorganizcd with capital stock of $15,000. C. F. Ford is president of the company; F. G. Cuttle, vice president and H. W. Volk, secretary and treasurer. The business will be increased.

Mississippi, Columbus. The Columbus Underwear Co.'s property is at present in the U. S. Court. The mill is being well cared for. Adjustment of its affairs is indefinite.

*New Hampshire, Keene. The project of establishing a new plant to be known as the Monadnock Hosiery Co. has been abandoned.

*New York, Averill Park. A meeting has been held by the stockholders of the Faith Knitting Co. to consider rebuilding the mill, and resolutions were adopted to have plans prepared for a new building on the old site.

*New York, Batavia. We have been advised that nothing has yet been definitely settled regarding the proposed knitting mill at this place by H. E. Patrick and Fredd H. Dunham.

New York, Brooklyn. Barnet Davidson has removed his Colonial Knitting Mill to 68 Stagg St. He manufactures sweaters, blouses, jackets, vests and bathing suits on 12 knitters, using gas as the motive power and selling the production direct.

New York, Brooklyn. R. Ruddermann, proprietor German Knitting Mills, is now located at 13 and 15 Bleecker St., where he is operating 18 knitting and 8 sewing machines on sweaters, etc. The N. Y. office is at 43 Leonard St.

New York, Brooklyn. The Boerum Knitting Mills at 68 Johnson Ave. is now owned and operated by M. Chester. Mr. Tepper is no longer interested in the plant. Mr. Chester operates 10 knitters and 4 sewing machines on woolen and worsted cardigans and sweaters, selling direct. He states that it is his intention to remove into larger quarters within a few months.

*New York, Clayville. At recent meeting of the directors of the Clayville Knitting Co., the following officers were elected: W. T. Baker, president; John W. Allis, vice-president; Geo. W. Oatley, secretary and Quentin McAdams, treasurer.

*New York, Frankfort. The Duofold Health Underwear Co. is making preparations to start up the old Mohawk Valley Co.'s building and will manufacture ladies' and children's Patented Underwear, in cotton and worsted. Later they propose using both silk and linen yarns. Joseph Berger will be superintendent of the plant.

New York, Geneva. The Union Textile Company is reported to be dissolved. It is understood that the business will be continued by a new company to be formed later.

New York, New York. The Ardsley Knitting Mills, Inc., with capital stock of $10,000, report a very active business on their line of ladies' Swiss ribbed underwear. They propose, in the near future, installing several new knitters, replacing part of those now in use. Product is sold through Critten, Clift & Co. Louis Auerbach is president of the company; S. P. Ahrenberg, vice president; I. Kay, secretary and treasurer and Mr. Ruthenberg, superintendent.

New York, New York. Shapiro & Balacaier, 199-201 Grand St., have been succeeded by The Grand Knitting Mills, with I. A. Balacaier, a member of the late firm, sole owner. Mr. Balacaier states that he is doing a good business on ladies' knit blouses, sweaters and fancy knit novelties, which he sells direct. Operates 12 knitters and 10 sewing machines by steam.

New York, New York. S. Rosano has taken over the business formerly run by S. Elberg at 126 E. 3d St. The plant contains 8 knitters which are run on German hosiery of wool which he is selling direct.

New York, New York. Oppenheimer, Bonnem & Co., manufacturers of knit shawls, scarfs, etc., of wool, worsted and zephyr on 30 knitters and 10 sewing machines, with Ed. Tobias as superintendent, at 135th St. and Willow Ave., Bronx, are removing their main office and warerooms to 584 Broadway, at which address they will be found after February 1st.

*New York, Utica. The Mohawk Valley Cap Factory and the LaTosca Knitting Co. have completed erection of the new three story brick building, 240 by 80 feet. This building is equipped with 8,000 spindles and 72 cards for spinning cotton underwear and hosiery yarns, for the company's own consumption. D. W. Gray formerly with the Skenandoa Cotton Co., is superintendent of this department.

*New York, Warsaw. D. M. Tempest of Perry, has been reported as having purchased the Warsaw Knitting Mill and will install about $15,000 worth of new machinery for making underwear.

*North Carolina, Weldon. The new knitting mill mentioned to be started here, is the Balfron Knitting Co. which has removed plant here from Henderson. Capital stock is $100,000; W. T. Shaw, president; W. B. Tillery, treasurer and P. H. Brown, manager. This plant makes men's and women's underwear.

Pennsylvania, Hamburg. S. D. Bausher's Gotham Knitting Mills in which he manufactures heavy and light weight cotton underwear for women, is very busy. The machinery is now being put in condition for changing it over to light weights. The superintendent of the plant is C. Yeager.

*Pennsylvania, Hummelstown. The Hummelstown Hosiery Co.'s mill, which was sold to Geo. P. Hoffer, has not yet been started. It is not known at this time when operations will be resumed.

Pennsylvania, Jonestown. It is reported that a small knitting plant is to be established here.

Pennsylvania, Philadelphia. The United Knitting Co., 441 North Second St., manufacturers of ladies' and misses' golf blouses and all kinds of knit goods, are adding a commission business to the manufacturing plant, for all kinds of knit goods.

Pennsylvania, Philadelphia. The Argood Hosiery Co., recently mentioned by us as having removed their plant from Riverton, N. J., to this city, are now located at 2632 N. Mascher St., where they are manufacturing women's and infants' seamless hosiery on 10 knitters, using mercerized and cotton yarns. J. R. Stewart, the superintendent, states that it is their intention of materially increasing the plant in the very near future.

Pennsylvania, Philadelphia. Ellis Bros., 533 Market St., large jobbers of knit goods, are in the market for any novelties which knitting mills have to offer for cash, and would be glad to have them communicate with them on this subject.

Pennsylvania, Philadelphia. It is reported that the floors formerly occupied by Ferguson & Co., Mutter St. and Lehigh Ave., have been leased by parties who will equip same with machinery for manufacturing full fashioned hosiery.

Pennsylvania, Phoenixville. On August 1st Messrs. J. P. O'Donnell and J. J. O'Donnell, under the name of James P. O'Donnell & Bro., started up a plant for the manufacture of ladies' fine Swiss ribbed vests and at the present time are very busy.

Pennsylvania, Port Carbon. The Superior Knitting Co., which has succeeded to the business of H. L. Miller, has for its capital $12,000 and the following officers: H. L. Miller, president and superintendent and Geo. W. Beddall, treasurer. They are manufacturing women's and children's cotton ribbed underwear on 17 knitters and 30 sewing machines, selling the product through New York, and report business as good.

Pennsylvania, Pottsville. During the month of September, 1906, John H. Kaiser, who has been operating a knitting plant for the manufacture of women's underwear, sold out the business to the John D. Knoll Hosiery Co., who will continue to operate the plant on the same line of goods. The members of the new company are John D. Knoll and George L. Johnson.

Pennsylvania, Schuylkill Haven. J. C. Lautenbacher, proprietor of the Enterprise Knitting Mills, manufacturer of misses' and children's union suits, has been extensively improving his mill property and reports that it is now in first-class and up-to-date condition.

Pennsylvania, Wernersville. The mill at this place, formerly operated by J. Ulysses Hain, is now running with W. J. Bricker as proprietor, under name of the Wernersville Hosiery Mill.

Utah, Ogden. The Utah Knitting Works have been sold to Jos. A. West, Geo. Thorstensen and C. H. Thorstensen; not yet incorporated. Will manufacture same class of goods as made by the old company; viz: cotton, wool and worsted underwear.

Personals.

Arthur R. Dickinson has accepted the position as assistant superintendent of the Utica Knitting & Cotton Company, Utica, N. Y. He was formerly superintendent of the Fall River Mfg. Company, severing his connection with that firm when it was absorbed by the Pocasset Mfg. Company.

Geo. Cummings has resigned his position with the Tivoli Knitting Mills, Cohoes, N. H., where he was employed for more than twenty-five years as boss knitter.

Harvey S. Green of Cohoes, N. Y., who has been connected with the Cascade Knitting Mills will devote most of his time hereafter to his interest in the Campbell & Clute Machine Works.

Robert Shephard of Johnstown, N. Y., has accepted a position as overseer of dyeing for the Cooper Underwear Company, Kenosha, Wisconsin.

W. B. Tyrrell has accepted the position as overseer of knitting for the Globe Knitting Mills, Delavan, Wis.

Edwin Davenport has accepted the position as overseer of finishing for the Mankato Mills Company, Mankato, Minn.

Frederick O. Benson, for ten years boss dyer and finisher at the White Cat or Cooper Underwear Company of Kenosha, Wis., has resigned and will take a few weeks' vacation.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery etc., of interest to textile mill men.

We invite machine builders and others to send us such information for this department.

Vibrating Stuffing Box. The Steel Mill Packing Co., Detroit, Mich., are placing on the market an improved stuffing box, which automatically adjusts itself to any out of line movement of the piston rod or stem. The stuffing box is arranged with a casing and is held against a ground ball joint ring by springs and steam pressure. A clearance is provided between the stuffing box and the interior of the casing and between the rear of the stuffing box and the cylinder head, permitting the box to move sideways whenever the rod or stem moves out of line.

Collar Board for Mules. The Rob Schaellibaum Company, Providence, R. I., recently brought out an improved collar board for woolen and cotton mules. A notice of it appears in another part of this issue.

Cloth Folding Machine. Knowles & Co., Bradford, England. An improved cloth folding or plaiting machine which is said to be capable of a large production.

Embroidery Machine. Adolph Saurer, Arbon, Switzerland, has recently made several important changes in his foot power embroidery machine.

Beamer for Narrow Fabrics. T. Attenborough, Long Eaton, England. An improved beaming machine for narrow fabrics. It is provided with a stop motion and is said to be capable of a greatly increased production.

Cloth Cutting Machine. J. W. Knowles & Sons, Bradford, England. A machine for cutting cloth samples with scalloped instead of straight edges. The device has been used on cloth samples in England for some time with much success as the scalloped edge does not ravel so easily. The Knowles machine is adapted for silk, woolen, linen, or cotton goods.

Condenser Card. Wm. Tatham, Rochdale, England. An improved condenser for finisher cards especially adapted for handling waste cotton stock.

Braiding Machine. A. Orthmann, Elberfeld, Germany, has recently brought out a braiding machine for producing fancy effects.

Buffer for Mule Carriages. Societe Anonyme Vervietoise, Verviers, Belgium. An automatic buffer to receive the shock of the mule carriage as it returns.

Fulling Mill. Lumb, Walshaw & White, Morley, England, have recently brought out a fulling mill of improved design which is said to require no more floor space than the old style of machine and to have a capacity of 50 per cent. greater.

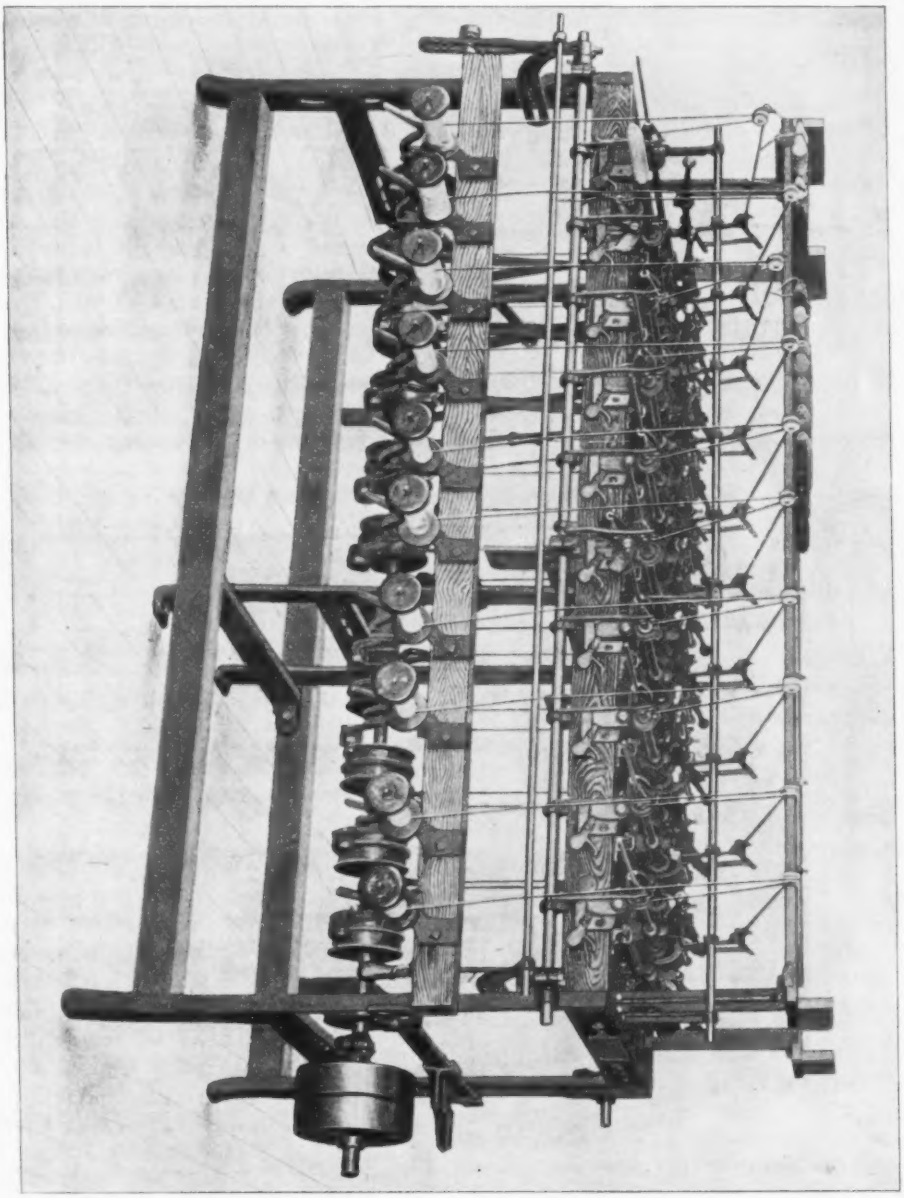
Warper for Narrow Fabrics. P. F. Reinshagen, Barmen, Germany. An improved warper for narrow fabrics, which is claimed to give a larger production and better work than has heretofore been possible.

New Dyeing Machine. Tomlinson & Milan, Huddersfield, England. An improved dyeing machine for raw stock, consisting of a revolving drum in which the stock is placed and which is partially immersed in the dye liquor.

Jigger. Jaques Cadgene, Lyons, France, has recently brought out an improved jigger by which it is claimed that goods can be colored much more uniformly and with less difficulty than in the ordinary type of this machine. One of the principal changes he has made is to enlarge the diameter of the rolls, thus enabling the cloth to be reversed more rapidly than when small rolls are used.

A HORIZONTAL YARN WINDER.

This machine, built by the Oswald Lever Company, Lehigh Avenue and Mascher Street, Philadelphia, can be adjusted to wind yarn from either skeins, spools, mule cops, ring bobbins, or cones, and will wind on cops to be unwound during weaving either from the inside or the outside. It will also wind on butts to weave from the outside from an ordinary shuttle. It is adapted for either fine or coarse cotton, woolen, worsted, linen, or jute yarn, and will make any size of cops or butts from the smallest diameter used to that of three inches, and of any length up to 15 inches.



THE OSWALD LEVER HORIZONTAL YARN WINDER.

The machine has been designed with the object of putting as much yarn as possible into the shuttle in the form adapted for the work in hand and to give the best results. The builders claim that in this respect it is not excelled. On all kinds of work each cop, butt, or bobbin, is filled or emptied independently, and is stopped automatically to give any desired length.

In order to demonstrate the merits of this winder the builders will wind samples of yarn sent to them and return them promptly, and will be glad to give any further information desired.

A COLLAR BOARD FOR WOOLEN AND COTTON MULES.

The improved bolster or collar board manufactured by the Robert Schaellibaum Company, Providence, R. I., is adapted for both woolen and cotton mules. It is intended to overcome the disadvantages attaching to the bolster heretofore in use. The claims made for it are summarized as follows:

"Continual oiling by hand is abolished. Wages for up-keep are eliminated.

"There is no waste of lubricant, but full value as an effective lubricant is obtained at a far less outlay.

"The spindle always runs in the lubricant.

"Friction on the spindle is reduced to the lowest point.

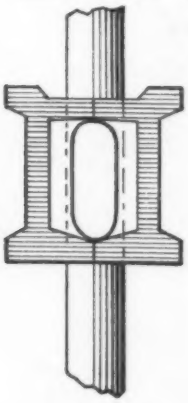
"The spindle turns freely and never departs from its true position.

"The screws that fasten the collar board are placed horizontally, consequently the board is always firm.

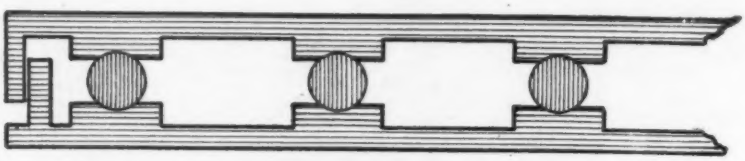
"As there is no necessity for a thread in the hole in which the spindle is held, there is less friction on the spindle.

"It lasts considerably longer than any other."

The collar board or bolster is in two pieces, being cut vertically down the centre from end to end. It consists of a series of cells, which are filled with grease, a channel connecting them giving a constant supply to the spindle. As none of the grease can escape and the amount of evaporation is low the board can run many months without refilling. It is claimed that the cost of labor for efficient working is, for all practical purposes, entirely dispensed with, while full value is obtained for all the lubricant used.



VERTICAL SECTION.



HORIZONTAL SECTION.

In the course of time the hole through which the spindle is set must necessarily wear, as in other collar boards, causing the spindle to vibrate, but as the Schaellibaum board is cut through the diameter of the hole the front section may be removed by unscrewing and the inner section filled and reset, bringing the hole to its proper size; or the two sections of the collar board can be exchanged. This ensures a close fitting spindle and prevents bad work resulting from its vibration.

The following letters received from users of the Schaellibaum bolster substantiate these claims:

Richard Howarth, Superintendent of the Seabright Woven Felt Co., Camden, Me.:

In regard to your inquiry as to the collar board we are now using of your make, all I can say is that we have been using this fourteen months and it is giving entire satisfaction in every way. As stated in a previous letter to you, we heartily endorse this board, and when the collar boards we are now using play out we shall certainly replace them with the Palmer collar board.

R. A. Julia, Assistant Superintendent at the Cowan Woolen Co., Lewiston, Me.:

We have used the collar boards for the last eighteen months and find them perfectly satisfactory. Our spinner is pleased with the results they give and finds they save a great amount of oil.

These letters show that the bolster has been subjected to the test of mill use and has proved satisfactory. The Schaellibaum company are confident that in its own particular field the bolster will prove as useful as their well known grid. They state that in consequence of the shape of the cells the actual bearings of the spindles are reduced by one-half and consequently less power is required to drive the spindles, while they are held quite as firmly. This meets any assumption of increased power being required in view of the use of grease. The grease employed is "Keystone" No. 5, which is not too heavy and has the advantages of being stainless and of not getting hot. The use of this collar board prevents any of the oil or grease splashing on the yarn.

FIRE PROTECTION FOR THE MANUFACTURING PLANT.

A large number of factories are so situated that they cannot depend upon the town or city fire department for assistance in case of fire and even those that are so fortunately located within a district covered by some fire departments are liable to be totally destroyed before help can reach them. The quicker a stream of water can be turned on a blaze, the greater are the chances of being able to control it before serious damage is done. This is particularly true of plants where everything is of an inflammable nature. Insurance rates are necessarily in many cases prohibitory on this kind of property, but there is a form of insurance within the reach of all, the cost of which for a lifetime would hardly amount to one or two years' insurance premiums.

In this connection we call attention to the Goulds rotary fire pumps connected to gas or gasoline engine; and by belt or gearing to water power in order that the pump can be operated independently of other machines; or better still connected to an electric motor, if current is available. The discharge is piped to several fire plugs in different parts of the factory and each plug is fitted with a length of hose and a nozzle. Should fire be discovered the pump should be started immediately and within a few minutes one or more streams can be directed upon the blaze.

A power pump is preferable for this kind

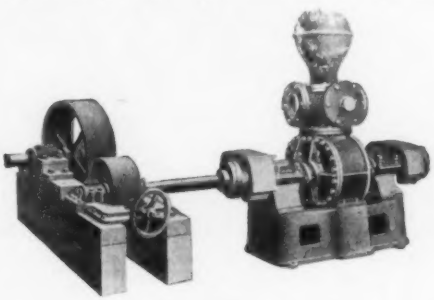


FIG. 1.

of service, as it is not dependent upon the steam pressure in the boiler, which may be too low to operate a steam pump, especially out of business hours, or at night when fires

FIG. 2.

more often occur. A point of perhaps greater importance is that the power rotary pump is made of metal—iron body and bronze working parts—so it may stand idle for years and still be in working order im-

mediately as there are no packings or valves to dry out and become useless.

The development of the power rotary fire pump as built by The Goulds Mfg. Co. of Seneca Falls, N. Y., has brought about many changes and improvements in the last few years and their use for this service is the result of most careful and thorough investigation. Their construction has been carefully considered and they have been subjected to rigid tests by both the manufacturers and users. These tests have repeatedly demonstrated them to be absolutely reliable and invariably successful.

Rotary power pumps have certain characteristics of the triplex power pumps. They have a triplex or three-toed cam which insures a full continuous intake and delivery with a minimum of power. The peculiar formation of these revolving cams or pistons, has proven them to be of such shape as to produce a minimum of friction and wear with the best results.

The cases which receive these cams must necessarily be turned and bored as they fit into the cases so accurately that when in operation a practically perfect vacuum is created and the pumps will pick up water more quickly through a longer distance and hold it better than any other type of fire pump. Where water power is available direct connection to water wheel shaft by means of frictional gearing, see Fig. 1, is a very satisfactory arrangement. Other improved methods are the geared connection to electric motor, Fig. 2, and the direct connection by coupling to shaft of engine. Where the pump and engine are located in an isolated building, a belt drive is sometimes satifactory. A system of stand pipes with valves and hose connections on each floor of the building in connection with automatic sprinklers completes the most perfect equipment for the manufacturing plant, mill or factory. The Goulds rotary pumps are built in various sizes with capacities ranging from 125 to 1,125 gallons a minute and about 100 pounds pressure on an elevation of 230 feet.

A DEVICE FOR MOVING CARS IN MILL YARDS.

Many large manufacturers who run freight cars into their mill yards for the receipt or shipment of goods will be interested in a device called the "Giant" car mover, which enables a workman to move a car to the exact position required without help from the locomotive. It frequently happens that the switch engine does not leave the car in the most convenient position for loading or unloading. In such a case it is necessary for several men to be called to move the car to the right place and not infrequently the engine has to be brought up again. By means of the "Giant" car mover, however, it is claimed that one man can move a loaded car even on a fairly steep grade.

THE MITSHKUN CAR MOVER.

The "Giant" car mover is manufactured by the M. Mitshkun Co., Detroit, Michigan, and they are confident that it is unexcelled for this purpose. The device is sold at a very low price and is now in use in a number of railroad and mill yards. Further information can be obtained upon application to the manufacturers.

In the ten years since 1896 the foreign trade of the United States increased nearly 80 per cent.; that of Canada increased over 130 per cent.

THE CORNELL CONE DYEING MACHINE.

An important improvement in the dyeing of yarn on paper tubes has been made by the Cornell Stocking Corporation, Myrtle Street, New Bedford, Mass. Probably in no other department of textile manufacturing have inventors been more industrious than in the construction of new models of automatic dyeing machines. Most of their efforts, however, have been directed toward devising more convenient forms of machines for the circulating method by which liquor is forced through the material on perforated tubes.

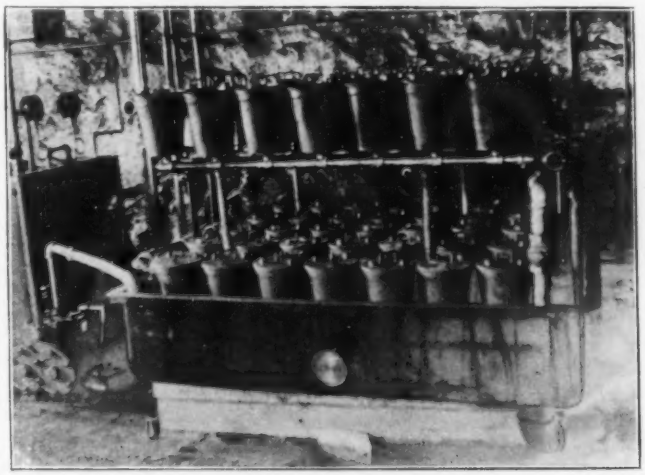


FIG. 1. THE CORNELL DYEING MACHINE.

The Cornell machine, Fig 1, is noteworthy because the perforated tube is dispensed with. As shown at Fig. 2, a wooden plug is inserted in a conical tube. The cone of yarn is then placed in an iron flask, A, shaped so that the yarn presses firmly against the sides. The cap, B, is quickly screwed by a few turns of the top of the flask, making a water tight joint. The liquor then enters the flask freely by the inlet, C, and is forced downward through the yarn. The liquor has a tendency to press the cone downward, which results in increasing the pressure of the yarn against the sides of the flask, thus preventing any liquor from passing between the flask and the yarn; all of it must pass through the yarn itself.

The narrow end of the cone rests on the false bottom, D, in which holes are bored to allow the liquor to pass to the outlet, E, where it is carried to the tank from which it is again forced around to the top of the cone.

To all familiar with the ordinary types of circulation dyeing machines the novelty of the Cornell construction will be apparent at once. The machine is built in different sizes, the ordinary size having 70 flasks, each holding a 2 1/4 pound cone and giving a production of about 160 pounds at each dyeing or about 500 pounds a day. The cone can be wound by any of the winders on the market.

We have seen this machine in operation and examined the work done by it, and found the color to be uniform throughout all parts of the cone. Goods made from it showed no variation in shade. It is being used successfully for dyeing sulphur and developed blacks on cotton and for after-chromed blacks on worsted yarn. The cones come from the machine in practically the same shape as when they entered, there being no disturbance of the yarn during the process of dyeing. The yarn is rinsed and treated to the softening

process in this machine. The cones are delivered to the winder to be wound on the bobbins or spools as desired, in practically as good shape as before dyeing.

The builders state that the waste in winding is no more than if the yarn was wound in the white. A 70-flask machine occupies a floor space of 6 by 9 feet. The number of dips a day of course varies according to the character of the dyeing process. The simplicity of the Cornell machine is one of its striking features as well as the method of circulating the liquor through the yarn.

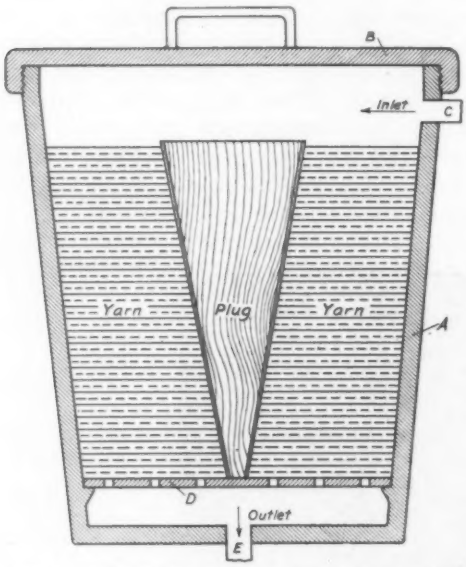


FIG. 2. A SECTIONAL VIEW OF THE CORNELL DYEING MACHINE.

Of special importance in this process is the fact that the cone or yarn package received the flow of dye liquor from end to end, rather than diametrically as in machines employing the perforated spindle construction. The claim is made that should there be a slight difference between that portion of the package receiving the liquor first as compared to the other end of the package receiving the liquor last after passing through the yarn, this difference in shade would be confined to a length of yarn not longer than the actual traverse of the yarn across the cone, whereas in a diametrically penetrated package the outer layers of yarn (on say 20s cotton) would be probably 20,000 yards from the inner layers, and consequently a cut of cloth woven from such a package would show a distinct "end" in the coloring.

A ROLL STAND FOR SPINNING FRAMES.

Ease of adjustment is the advantage claimed for a roll stand recently patented in this country. The inventor states that these stands, as heretofore made, have consisted of a standard on the upper end of which was an inclined head having on its forward end a bearing for the front roll and on the rear end a flange upon which rested the rear-roll

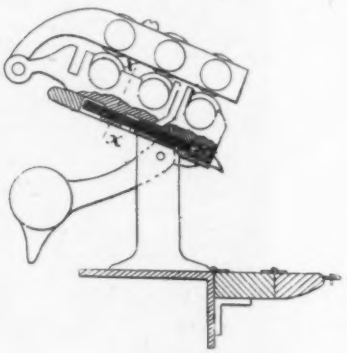


FIG. 1.

FIG. 2.

bearing. The rear-roll bearing was connected to the flange by a clamping-bolt passing through a longitudinal slot in the flange, which had a clamping-nut on the under side to hold it in position. In practice it was necessary to reach over in the rear of the stand, with a liability of breaking or injuring the roving, in order to loosen the nut and slide the rear-roll bearing one way or the other. This operation took considerable time, it could not be done while the machine was running, and there was, as stated, great danger of breaking the roving, as it was directly in the way when the adjustment was to be made.

According to the new construction, the two parts are adjusted by means of a screw which extends from the forward end of the head and engages a nut on the under side of

the rear-roll bearing, the nut sliding in a longitudinal groove or slot. By this arrangement the bearing may be quickly adjusted by a screw-driver from the front while the machine is running, with no interference with the yarn whatever. It is claimed that the ease and quickness with which this adjustment can be made enable the operator to do much better work and to keep the distance between the rolls right for whatever staple is used.

Fig. 1 is a side elevation of the roll-stand with a portion in section. Fig. 2 is a section on x x of Fig. 1.

The rear-roll bearing carries the rear rolls and rests on a flange, on which it slides for adjusting the space between the front and rear rolls. To effect this adjustment there is on the under side of the bearing a nut, which fits in a slot and is moved by means of a screw, which extends through from the forward end of the head and engages the nut. The screw is held against any longitudinal motion, as here shown, by means of another screw, which extends laterally through the head and enters an annular groove, formed in the screw-head. This screw is thus used for limiting the motion of the screw longitudinally and also for clamping it to hold it from turning.

MEASURING FABRICS.

In view of the increasing use of various processes for indicating the length of finished cloths as offered for sale, a recently patented method will be of interest. Fig. 1 shows a roll of ribbon marked by the new process.

The manner in which the device is used is as follows: The ribbon or other fabric is wound on the roll together with a strip of measuring-paper, the ends of the ribbon and paper being even. The number of yards placed upon the drum is indicated on the measuring-strip. When retailing the fabric, the clerk always starts with the "o" on the cross-line at the end of the ribbon, which in Fig. 1 is "o-A," the letter "A" indicating that only those numerals having "A" as an index need be observed by the clerk, serving as an index. The next "o-A" occurs on the strip eight lines from the first "o-A," or one yard from the end of the ribbon. Should only three-eighths of a yard be wanted, the clerk will cut the ribbon and measuring-strip at "3-A," an equivalent of three-eighths of a yard. The ribbon and measuring-strip having been cut at "3-A," the clerk disregards the "3-A" when the next sale is made and uses "o-D" for his guide, cutting on the line having the desired number of eighths opposite the index-letter "D." If a plurality of yards are desired, he skips as many "o-D's" as necessary to give him the number

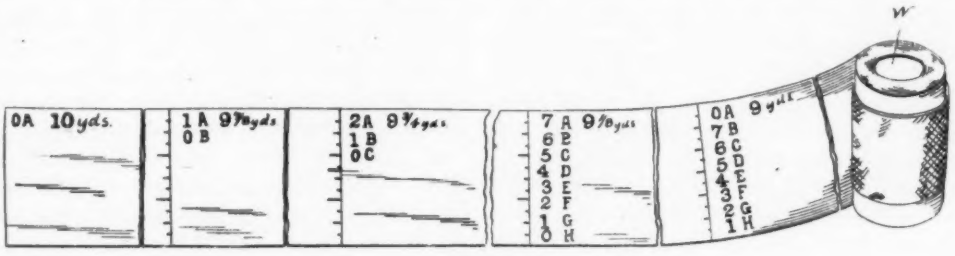


FIG. 1.

of yards and cuts at the proper fraction opposite his index-letter, the idea of the index-letters being to avoid the necessity of figuring where to cut off a fraction of a yard if the end of the measuring-strip registers a fraction. When three-eighths of a yard has been cut off, if only one series of fractions were used it would be necessary to figure where the ribbon must be cut next if six-eighths of a yard is desired. This invention avoids the necessity of such figuring by having at the same division with the three-eighths another series which begins with zero, and to cut off six-eighths of a yard it is only necessary to observe the zero index-letter and cut the ribbon at the next mark where "6" is found with the proper index-letter alongside of it.

Dyeing, Bleaching, Printing, Etc.

THE DYEING OF ARTIFICIAL SILK.

BY DR. KARL SUVERN, in Die kuenstliche Seide.

Artificial silk is now produced by various improved processes and can be colored as easily as ordinary textile fibres and many of the large color manufacturers issue detailed instructions for the use of their dyes on this material. The two most important varieties of artificial silk, namely, the Chardonnet silk made at Frankfort, and the cellulose silk made at Elberfeld, are colored by different processes. The Chardonnet silk is very easily colored with basic dyes without a mordant, while the same dyestuff can be used for coloring cellulose silk only after mordanting the material with tannin or tartar emetic. All kinds of substantive dyes can be used for coloring cellulose silk while these dyes can be used only to a limited extent for dyeing Chardonnet silk. This Chardonnet silk, as far as dyeing is concerned, resembles more closely the animal fibres, while cellulose silk is more like cotton in this respect. The dyeing of viscose is similar to that of cellulose silk. As viscose has a strong affinity for the basic dyes brighter shades can be obtained without mordanting, After dyeing the lustre may be increased by treating with an emulsion of oil and alkali and by drying under tension at a moderate temperature.

One of the largest manufacturers of dyes recommends that in coloring artificial silk a large proportion of liquor should be used as compared with the material treated, say, in the ratio of 1 to 40 or 50. The temperature of the liquor for coloring cellulose should not exceed 140° to 150° F.; and 112° to 122° F. for Chardonnet silk. In exceptional cases the liquor for cellulose silk can be heated to 180° F. The time varies from one half to one hour.

With benzidine dyestuff from 5 to 15 per cent. of crystallized Glauber's salts is added to the bath, the quantity varying with the depth of the shade. The temperature is then raised to 86° F. and afterward to the temperature already named. In coloring light shades it is advisable to begin without the Glauber's salts and add the salts after the process had been carried on for a short time. The addition of soda facilitates the extraction of the dyestuff aind helps to equalize the color. The addition of 2 to 4 per cent. of soap also helps the dyeing process and gives the goods a soft handle. When using basic dyes on cellulose the material is first mordanted by heating the water to 140° F. and then adding 2 to 4 per cent. of tannin and 1/2 to 1 per cent. of muriatic acid. The material is handled for a short time and then left for two or three hours with an occasional turning. It is finally turned several times in succession, then taken out, extracted, and handled for 20 to 30 minutes in a cold solution containing 1 to 2 per cent. of tartar emetic. In dyeing the material, from 3 to 6 per cent. of acetic acid is added to the liquor. The process is begun at the ordinary temperature, adding the dyestuff gradually and then heating the liquor to 122° F. Chardonnet silk is colored with the basic dyes without a mordant. Acetic acid is added to the dye bath for cellulose silk. By mordanting Chardonnet silk darker shades are obtained, which are faster to light, water, and friction than are the unmordanted colors. The mordanting method should be always used when dark shades are desired.

According to a formula used by another color manufacturer the temperature of the dye bath should not exceed 140° F. Before dyeing, the material is saturated with water at 122° to 140° F.; after dyeing it is extracted, opened up, and dried at the usual temperature. The ordinary dyestuffs are used for coloring artificial silk.

For coloring with sulphur dyes two rollers are placed in front of the tub and all metal parts are made of copper or brass instead of lead or iron. In using the diamine colors for either Chardonnet, cellulose or

viscose silk, soap is added to the dye liquor to soften the material and facilitate the extraction of the dye. The amount of liquor for ordinary colors is 30 times the weight of the material. For dark shades and black the proportions vary between 20 and 25 to 1. For bright shades an addition of 1 per cent. of calcined soda and 2 per cent. of soap is recommended. The material is treated for one-half hour at 86° F. For bright and medium shades 1 per cent. of calcined soda, 2 per cent. of soap and 5 to 10 per cent. of Glauber's salts are added. The temperature is brought to 86° F. and then slowly to 122° F., where the material is handled for half an hour. For dark shades and black the same proportions of soda and soap are used along with 15 to 20 per cent. of Glauber's salts. The temperature at first is 86° F.; this is slowly raised to 140° F., and the material handled from one-half to three-quarters of an hour. Black can also be dyed at 140° F.

The dye bath, particularly for sulphur shades, is not exhausted and consequently the liquor can be used again to advantage. When using a standing bath three-quarters of the regular amount of dyestuff is used for light colors and two-thirds for black, along with one-fourth of the original quantity of soap, soda and Glauber's salts. The colors obtained with basic dyes are developed to some extent by an after treatment in a solution of acetic acid. Diazotized and developed colors are obtained on artificial silk by the methods used for cotton.

In coloring cellulose or viscose silk with the basic dyes the material is mordanted by handling from two to three hours at 122° F. in a bath containing 2 to 5 per cent. of tannin and 1 per cent. of muriatic acid. The material is then taken out and extracted and handled for twenty minutes in a fresh cold bath containing from 1 to 2 1/2 per cent. of tartar emetic and then rinsed. In dyeing, the material is handled for a short time in a cold bath containing from 5 to 10 per cent. of acetic acid. The dyestuff is then added gradually to the bath through a sieve and the liquor heated to 140° F. For bright shades on viscose silk the mordanting can be omitted. Chardonnet silk is colored with the basic dyes without previous mordanting. The material is saturated in a cold dye bath containing 5 to 10 per cent. of muriatic acid. After turning the silk for a while the dyestuff is gradually added to the liquor and then heated to 140° F. For colors on Chardonnet silk fast to water, washing and light, the material, as in the case of cellulose and viscose silks, is mordanted, then rinsed and colored in a bath containing acetic acid. The colors on mordanted Chardonnet silk are much darker than on the unmordanted material.

Colors very fast to washing and light are obtained with the sulphur dyes. The material is colored according to the formula used for cotton, except that the temperature is not raised above 122° F., while the proportions of soda and Glauber's salts are reduced. The addition of soap to the bath is also recommended. The dyebath, equal to 30 times the weight of the material, contains in addition to the necessary dyestuff twice as much crystallized sulphate of soda as dyestuff, also 1 per cent. of calcined soda, 2 per cent. of soap, and 5 to 10 per cent. of Glauber's salts based on the weight of the goods. The silk is entered at 122° F., the material handled for three-quarters of an hour and then taken out and squeezed carefully and rinsed well in cold water. Cellulose and viscose silks are then treated in a lukewarm solution of soap, then rinsed and soured in a weak solution of acetic acid. In coloring Chardonnet silk the soap is omitted. The dye liquor is not exhausted and consequently can be used as a standing bath, in which case one-half to three-fourths of the quantity of dyestuff is added at each subsequent dyeing; also twice as much sulphate of soda as dyestuff, and one-fourth the original quantity of soap and soda. The further addition of Glauber's salts is not necessary.

According to the formula of another color manufacturer from 20 to 25 times as much liquor as material is used for coloring with sulphur dyes. The quantities recommended are 4 to 6 per cent. of dyestuff, 6 to 12 per cent. of crystallized sulphate of soda, and 25 per cent. of Glauber's salts, the material being handled for one hour at 122° F. The material should be very carefully handled

and the silk turned as little as possible. After the silk is dyed it is carefully extracted, then rinsed and soured in a solution of acetic acid. It is recommended to use fresh liquor as the color is not as lustrous when the standing bath is used.

For an aniline black on cellulose silk the material is treated successively in the following solutions:

1. 12 lbs. chloride of soda in 120 lbs. water.

2. 21 1/2 lbs. yellow prussiate of potash in 112 lbs. of water.

3. 33 1/2 lbs. aniline salts in 88 lbs. water.

The silk is then extracted, steamed for several minutes in a Mather & Platt machine, then handled for a short time at 140° F. in a 1 1/2 per cent. solution of bichromate of potash. It is then thoroughly washed, extracted and dried.

Gelatine silk can be dyed only by the addition of dyestuff to the material before the latter has been drawn into a filament.

DYEING VIOLET BLUE.

A Swiss chemist and dyer has invented and had patented in this country a process of dyeing violet blue which is described by him as follows: It has been discovered that when dyeing or printing certain violet-blue coloring matters they have to be reduced in the presence of an alakli.

When printing, the dyes can be printed in a mixture with the reducing agent and an alkali and then steamed, or they can be printed in admixture with the reducing agent without the addition of an alkali and the printed material subsequently passed through the alkali. Fiber which has been thus incorporated with one of the aforementioned violet-blue coloring-matters can be recognized, since it yields the following reactions: Upon boiling with hydrochloric acid it remains practically unaltered in color, upon treatment with caustic-soda solution it becomes redder, and upon treatment with concentrated sulfuric acid it changes to a color ranging between greenish-blue and red-violet, and upon subsequent treatment with water it shows a violet color.

The following examples will serve to further illustrate the nature of the process which, however, is not confined to these examples: The parts are by weight.

Example 1—Process for dyeing with the dyestuff from the condensation product of beta-amido-anthraquinone and glycerin.—Suspend about fifteen (15) parts of a ten (10) per cent. paste of the coloring matter obtained from the condensation product of beta-amido-anthraquinone and glycerin in about one thousand (1,000) parts of water at a temperature of from ninety to ninety-five degrees centigrade (90° to 95° centigrade) and treat this suspension product with about fifty-five (55) parts of sodium hydrosulfite (containing about five (5) or six (6) per cent. of the salt) and about sixty-five (65) parts of caustic-soda lye, (containing about twenty-three and a half (23.5) per cent. of NaOH,) so as to produce a vat. Dye about fifty (50) parts of cotton goods in this vat by manipulating them therein for about three-quarters of an hour (45 minutes) while maintaining the temperature at from ninety to ninety-five degrees centigrade (90° to 95° centigrade). Wash and dry the goods, acidify, and wash again. By this process a dark-violet-blue shade of exceptional fastness against the action of light, washing, and chlorin is obtained.

Example 2—Process for dyeing with the dyestuff from the condensation product of anthranol and glycerin.—Suspend about fifteen (15) parts of a ten (10) per cent. paste of the dyestuff obtained in the alkali melt from the condensation product of anthranol and glycerin in about one thousand (1,000) parts of water at a temperature of from sixty to sixty-five degrees centigrade (60° to 65° centigrade) and treat this suspension product with about thirty-five (35) parts of a solution of sodium hydrosulfite (containing about five (5) or six (6) per cent. of the salt) and about twenty-five (25) parts of caustic-soda lye, (containing about twenty-three and a half (23.5) per cent. of NaOH), so as to obtain a vat. Dye about fifty (50) parts of cotton goods in this vat for about three-quarters of an hour (45 minutes) at a temperature of from sixty to sixty-five degrees centigrade (60° to 65° centigrade.) Wash

the dyed goods, acidify, and rinse them once more. By this method a dark-violet-blue shade of superior fastness against the action of light, washing, and chlorin is obtained.

Example 3—Process for printing.—Prepare a printing-paste from sixty (60) parts of gum-arabic, seventy (70) parts of dextrin, one hundred and ten (110) parts of water, five hundred (500) parts of caustic-soda lye, (containing about forty-one (41) per cent. of NaOH), fifty (50) parts of glycerin, sixty (60) parts of stannous oxid paste, (or a corresponding quantity of stannous chlorid), and one hundred and fifty (150) parts of a ten (10) per cent. paste of either of the dyestuffs employed in the foregoing Examples 1 and 2. Print the goods with this paste, dry, and steam for from five (5) to ten (10) minutes in an apparatus suitable for quickly steaming and in the absence of air. Rinse with water and wash with soda. Instead of stannous oxid or stannous chlorid, hydrosulfite or other reducing agent can be used.

Example 4—Process for printing without alkali in the printing-paste.—Prepare a printing-paste with two hundred and twenty (220) parts of British gum, seventy-five (75) parts of gum-arabic, four hundred and fifty (450) parts of water, fifteen (15) parts of stannous chlorid (tin salt) ninety (90) parts of ferrous sulfate (iron vitriol) and one hundred and fifty (150) parts of a ten (10) per cent. paste of either of the dyestuffs used in the preceding examples 1 and 2. Print the material with this printing paste, dry it, and pass it for about half a minute (30 seconds) through a warm solution of caustic soda (containing from ten (10) to twelve (12) per cent. of NaOH) at a temperature from 65° to 75° C. Wash the goods first with water and then in order to remove the iron, with a suitable acid.

In order to prevent the white parts of the goods upon which no coloring matter is printed from becoming slightly dyed, a little manganese peroxide can be added to the caustic soda in which the color is fixed.

The value of the hosiery and knit goods produced in Philadelphia in 1905 is estimated at $15,770,873.

UNEVEN COLORS ON WOOLEN PIECE DYES: THEIR CAUSES AND REMEDIES.

BY W. SANDER.
(In Leipziger Monatschrift fuer Textil-Industrie.)

The pieces must be thoroughly cleaned when entering the dye liquor in order to obtain a uniform color fast to rubbing. Great care must be taken in washing the goods after fulling in order to remove all soap from the fabric. This part of the process is often neglected. I have known cases where the goods were rinsed in cold water after fulling. The subsequent processes of drying and steaming set the soap so firmly in the goods that even a subsequent treatment in ammonia and dyeing is not sufficient to remove all the soap and grease. Goods colored in this condition are certain to be shaded and to crock more or less. This is true particularly of blacks and blues colored by the one dip method. Nothing that the dyer can do will make the color perfect under such conditions. The defect, however, is easily prevented by using care in fulling and washing. In rinsing after fulling a good supply of warm water should first be used and then the goods should be treated in a solution of ammonia. This is followed by a rinsing in warm water and finally in cold water. If the goods are well scoured and prepared properly for the dyeing process and the color still crocks the defect must be ascribed to the dyeing process. The best blacks for men's wear goods are colored by the one-dip method with an after chrome.

The development of many dyestuffs requires the addition of more or less acid. Likewise the various products are developed with more or less chrome. A dye that requires a small amount of acid may be precipitated by an excess of acid and in that case the color will crock. It is a good plan to boil the goods well before as well a. after the addition of the chrome.

The coloring of blue has been greatly improved in recent years. The best goods are dyed on a chrome mordant with Alizarine Cyanine, Anthracene or Alizarine Blue.

When the goods come out cloudy or uneven in shade the difficulty is caused either by improper cleaning of the goods before dyeing or by defects in the coloring process. If it is suspected that the goods are not scoured clean they should be treated for half an hour in a bath at 140° F. containing 2 per cent. of ammonia based on the weight of the goods. After this the pieces are rinsed thoroughly.

In coloring goods care should be taken to boil thoroughly in order that the color may be equally distributed. The pieces should not be allowed to stand after mordanting and before being colored, as in such a case they become dry in places which causes shades If they are to lie longer than a day it is advisable to cover them with a wet cloth. The dyestuff should be well dissolved in water and then poured into the dyetub through a sieve or cloth strainer. At 104° F. 2 per cent. of acetic acid and 10 per cent. of Glauber's salts are added and the goods run for a short time. The liquor is then brought to a boil in about three-quarters of an hour and boiled for three-quarters of an hour more. The bath is then exhausted by the addition of acetic acid. The acetic acid, amounting to 2 or 3 per cent. of the weight of the goods, should be well diluted and added in several portions. When adding each portion the steam should be turned off. The object in adding the Glauber's salts is to equalize the color. By this process uniform shades will be obtained providing the pieces are clean. If the entire amount of acetic acid is added at one time at the beginning of the dyeing process without the addition of the Glauber's salts and the liquor is brought quickly to a boil an uneven shade is sure to result because the dyestuff will go on to the goods rapidly and consequently irregularly.

It is also important to have the steam pipes in good condition and well distributed across the dyetub so that one side will not get more steam than the other. It is necessary also to have the perforations in the steam pipe uniform in size for the same reason. If, for example, four strings are running in the dyetub the one next to that part of the pipe from which the most of the steam is coming will be darker than the other strings because the excess of heat will cause the dye to go on that string more rapidly. This point should be considered and the perforations in the pipe examined whenever any difficulty arises with shaded pieces.

Rust spots are often found on the goods when iron water tanks and iron water pipes are used and the pieces left over night in the washer. The valves are seldom perfectly tight. If the pieces are left in the washer over night the water drips on them and causes rust spots. The remedy is obvious: have the pieces removed from the washer at the close of the day. Rust spots are removed with oxalic acid. When the spots are numerous or very pronounced the use of oxalic acid often results in spreading the rust and making a ring. These spots are specially prominent when the goods are colored light shades. When the piece is badly spotted it is well to treat it with a 1/2 per cent. solution of oxalic acid in an ordinary washer. The goods are afterward treated in a solution of ammonia to neutralize the acid. The pieces should not be run in the acid bath for a very long time as this makes the cloth harsh and the pieces are liable to shrink in width.

Iron spots may also be caused in the dyeing process when the goods are run over reels in which iron screws or nails are exposed. The heads of the nails rust very quickly and mark the cloth. This is especially liable to occur with light shades and in the morning after the dye kettle has stood empty over night and the rust has had an opportunity to form. The remedy is to sink the heads of the screws or nails and cover them with wood.

Spots may also be caused by the gum boiling out of the wood of new dyetubs. These spots can be removed by rubbing with sulphur spirits, which leaves a white, colorless spot and necessitates a redying of the goods. New dyetubs should be thoroughly boiled out with a soda solution in order to remove the surplus gum from the wood. It is also advisable to use new dyetubs for blacks and other dark colors at first. The water used for dyeing contains more or less foreign material, according to the source from which it

is obtained and the weather conditions. River water is especially liable to become polluted in time of hard rains and can be purified with sulphate of alumina. The more acid used in the dyebath under these conditions the less is the difficulty with impure water.

Oil spots are caused by the oil dripping from the machine. It is important that the dye tub be constructed so that no oil can drip or fly from the bearings to the cloth. Oil spots can be removed by rubbing them with an easily saponifiable oil and then with a solution of soap or acid. In case the goods are badly spotted the pieces should be put back into the washer and scoured thoroughly in order to remove the spots caused by the soap or acid solution.

Dye spots are caused in many ways. If, for example, a light shade is colored in a tub right after a dark shade, streaks or clouds are almost sure to result from the bleeding of the dark dye from the tubs. The goods may be streaked by rubbing against the sides and corners of the tub or the shade may come out darker than the sample. This difficulty can be prevented by thoroughly boiling out the dye kettle. Still greater danger of shaded goods exists when half wool colors and acid dyes alternate in the dyetub. After coloring with an acid dye the tub should be thoroughly boiled out with an alkali solution in order to neutralize the acid in the wood. If this precaution is omitted and half wool goods are colored in a tub with substantive dyes and the addition of Glauber's salts, the acid from the wood is certain to cause streaks. After coloring half wool goods the tub should also be thoroughly boiled out with soda.

Spots are also caused by an imperfect solution of the dyestuff. To prevent this the dye mixture should always be strained through a sieve or cloth. It is a good plan to construct the perforated partition that separates the goods from the steam pipes with a solid board at the top so as to prevent the dye from floating through to the cloth when first introduced behind the partition. The lower board in the partition should also be solid in order to prevent the steam from blowing directly on the goods. Cases have been known where spots have been caused by the dry dyestuff being blown by currents of air on to the pieces. To prevent this the dye should be mixed in a room separated from the dye house by a partition.

STORING AND DISSOLVING DYESTUFFS.

BY E. S. GRAVES.

Dyestuffs are easily spoiled and should be kept cool, dry, and well covered. Several colors, such as the acid fuchsines, take up moisture and carbon dioxide from the air, which causes them to cake and lose their tinctorial power. The methyl violets and some other basic colors solidify under the action of moisture and heat, and become extremely difficult to dissolve. Other colors take up moisture to a marked degree and often with no change in the appearance of the powder. This moisture can cause a great deal of difficulty in dyeing, especially in dyeing compound shades as there is no telling the exact strength of the dye. Sulphur colors are very liable to decomposition, especially in the presence of moisture and carbon dioxide, the action often going so far as to render them worthless.

Great care should therefore be taken in selecting a suitable storeroom and weighing room for the colors so that the dyestuffs do not become too warm by the action of the sun's rays, or otherwise, that no undue moisture is present such as leakage from steam pipes, etc., and that the retainers are kept well covered. Paste colors must always be well stirred before using and must be protected from evaporation. Cotton cloth placed over the top of a keg and pressed in by the lid will keep paste colors in good condition. The storeroom and the weighing room should be well removed from the dye house and cloth rooms, as there is always more or less dust from the colors which in contact with finished goods would prove ruinous.

A reliable workman should have charge of the weighing and storerooms as great care must be exercised in this department to insure satisfactory results.

When dissolving dyestuffs the rule is to

add hot water to the dyestuff; never to add the dyestuff to the water since this often causes the dyestuff to float on the surface, and become enclosed in air bubbles The best way to prevent the colors from forming in little lumps of undissolved color is to make a paste of the dyestuff with cold water and then add the hot water. This is essential in the case of the Aniline and Methylene blues.

The solubility of almost all basic colors is increased by acetic acid or by a small amount of spirit. The dyestuff is mixed with about an equal amount of alcohol or acetic acid, which is much cheaper, and the boiling water then poured slowly over it. Alkaline Blues, Alkaline Violets and some of the substantive colors are best dissolved with the addition of a small amount of soda ash. Spirit colors are dissolved best in acetin. Dyes of the magenta group are best dissolved with the addition of a small amount of spirit. Sulphur colors require sodium sulphide and caustic soda for solution. If one wishes to add dyestuffs directly to the dye vat it is best to place the color in a fine wire sieve which is then dipped in the dyebath. Solution and filtration then take place simultaneously.

Color Cards.

Benzo Fast Red 9BL: Continental Color & Chemical Co., 128 Duane Street, New York City. Two samples of cotton yarn dyed with 1/2 per cent. and 3 per cent. respectively of Benzo Fast Red 9 BL.

Diamine Brilliant Bordeaux R; Cassella Color Company, 182 Front Street, New York. Six samples of raw cotton, cotton yarn and piece goods dyed with different percentages of Diamine Brilliant Bordeaux R, for which full dyeing directions are given.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 17.

Violet on Worsted Yarn.

Guinea Violet R on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Guinea Violet R.
(Berlin Aniline Works, 213 Water St., New York.)
10 lbs. Glauber's Salt.
5 lbs. Acetic Acid.

Enter material at 140° F. and raise slowly to a boil. After boiling ½ to ¾ of an hour, add

1½ lbs. Sulphuric Acid

and continue the boiling ½ hour.

Guinea Violet R will be found to satisfy the requirements of the ordinary acid color and will be found of value both as a self color and in the production of compound shades.

Recipe No. 18.

Green on Silk.

Silk Green on 100 lbs. silk. Prepare the dye bath with

1 lb. Silk Green.
(American Dyewood Co., 154 William St., New York.)
Boiled off liquor equivalent to ⅓ to ½ the total volume of the bath.
3 lbs. Soap,

and then add sufficient acetic acid to break up or neutralize the soap.

Enter material at 120° F. and dye at a boil for ¾ of an hour.

Silk Green will be found an excellent color for dyeing all classes of silk material.

Recipe No. 19.

Blue on Worsted Yarn.

Anthracene Chrome Blue F R on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Anthracene Chrome Blue F R.
(Cassella Color Co., 182 Front St., New York.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter at 120° F. and raise to a boil. Boil for twenty minutes and then exhaust the bath by adding

2-4 lbs. Sulphuric Acid.

When bath is exhausted, cool and add

3 lbs. Potassium Bichromate

and boil the material ¾ of an hour longer.

Anthracene Chrome Blue F R possesses excellent fastness to practically all the common color-destroying agencies.

Recipe No. 20.

Red on Cotton Yarn.

Diamine Brilliant Bordeaux R on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Diamine Brilliant Bordeaux R.
(Cassella Color Co., 182 Front St., New York.)
30 lbs. Common Salt.
½ lb. Soda Ash.

Enter at 180° F. and dye at a boil for one hour.

Diamine Brilliant Bordeaux R gives a bluish red of considerable brilliancy, and very good fastness to acids.

Recipe No. 21.

Pink on Cotton Yarn.

Direct Pink on 100 lbs. cotton yarn. Prepare the dye bath with

8 ozs. Direct Pink.
(E. M. Thayer & Co., 411 Atlantic Ave., Boston.)
10 lbs. Common Salt.

Enter yarn at a boil and dye at a boil until the bath is practically exhausted.

Direct Pink possesses very good fastness to light, acids and washing.

Recipe No. 22.

Black on Woolen Cloth.

Amine Black 4 B on 100 lbs. woolen cloth. Prepare the dye bath with

6½ lbs. Amine Black 4 B.
(Berlin Aniline Works, 213 Water St., New York.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter at 140° F., raise slowly to a boil, and after boiling ¾ of an hour, add

1 lb. Sulphuric Acid

and continue the boiling until the bath is exhausted.

Recipe No. 23.

Brown on Cotton Yarn.

Katigen Cutch B on 100 lbs. cotton yarn. Prepare the dye bath with

First Bath.

15 lbs. Katigen Cutch B.
(Continental Color and Chemical Co., 128 Duane St., New York.)
15 lbs. Sodium Sulphide (Crystals).
5 lbs. Soda Ash.
20 lbs. Common Salt.

Second Bath.

9 lbs. Katigen Cutch B.
(Continental Color and Chemical Co., 128 Duane St., New York.)
9 lbs. Sodium Sulphide (Crystals).
1½ lbs. Soda Ash.
5 lbs. Common Salt.

Enter the material at 190° F. and dye at, or just below, a boil for one hour, keeping the material below the surface of the liquor as much as possible.

Katigen Cutch B possesses good fastness to nearly all of the color-destroying agencies.

Recipe No. 24.

Green on Worsted Yarn.

Diamond Green 3 G on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Diamond Green 3 G.
(Continental Color and Chemical Co., 128 Duane St., New York.)
15 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter yarn at 140° F. Boil for ½ hour and then add

2 lbs. Sulphuric Acid

and continue the boiling until the bath is exhausted and then add

1 lb. Potassium Bichromate

and boil ¾ of an hour longer.

Diamond Green 3 G possesses very good fastness to most of the common color-destroying agencies.

Recipe No. 25.

Blue on Cotton Yarn.

Paranol Blue G B on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Paranol Blue G B.
(E. M. Thayer & Co., 411 Atlantic Ave., Boston.)
25 lbs. Common Salt.

Enter the yarn at a boil and dye at a boiling temperature for one hour.

Paranol Blue G B possesses excellent fastness to washing and also good fastness to light and acids. It is particularly useful for the dyeing of hosiery yarns.

Recipe No. 26.

Black on Woolen Cloth.

Amine Black 6 B on 100 lbs. woolen cloth. Prepare the dye bath with

6½ lbs. Amine Black 6 B.
(Berlin Aniline Works, 213 Water St., New York.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter at 140° F. and raise slowly to a boil. After boiling ¾ of an hour, add

1 lb. Sulphuric Acid

or

3 lbs. Bisulphate of Soda.

Boil ½ hour longer to exhaust the dye bath.

Amine Black 6 B yields an excellent shade of blue black. It possesses very good fastness to light, and good fastness to steaming, alkalies, acids and rubbing. It will be found of interest for the piece dyeing of ladies' dress goods and suitings.

Recipe No. 27.

Green on Cotton Yarn.

Pyrol Green 3 G on 100 lbs. cotton yarn. Prepare the dye bath with

1 lb. Pyrol Green 3 G.
(C. Bischoff & Co., 451 Washington St., New York.)
2 lbs. Sodium Sulphide (Crystals).
3 lbs. Soda Ash.
50 lbs. Common Salt.

Dye for one hour at, or just below, a boil, keeping the material below the surface of the liquor as much as possible.

Pyrol Green 3 G possesses the valuable properties of the other sulphur greens.

Recipe No. 28.

Blue on Cotton Yarn.

Pyrol Blue 2 B on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Pyrol Blue 2 B.
(C. Bischoff & Co., 451 Washington St., New York.)
20 lbs. Sodium Sulphide (Crystals).
6 lbs. Soda Ash.
80 lbs. Common Salt.

Dye at, or just below, a boil for one hour, keeping the material below the surface of the liquor as much as possible.

Pyrol Blue 2 B possesses the excellent properties of the sulphur blues.

Recipe No. 29.

Violet on Worsted Yarn.

Guinea Violet S 4 B on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Guinea Violet S 4 B.
(Berlin Aniline Works, 213 Water St., New York.)
10 lbs. Glauber's Salt.
5 lbs. Acetic Acid.

Enter material at 140° F. and raise slowly to a boil. After boiling ½ to ¾ of an hour, add

1½ lbs. Sulphuric Acid

and continue the boiling ½ hour.

Guinea Violet S 4 B will be found to satisfy the requirements of the ordinary acid color and will be found of value both as a self color and in the production of compound shades.

Recipe No. 30.

Green on Cotton Yarn.

Pyrol Green 3 G on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Pyrol Green 3 G.
(C. Bischoff & Co., 451 Washington St., New York.)
8 lbs. Sodium Sulphide (Crystals).
5 lbs. Soda Ash.
60 lbs. Common Salt.

Dye for one hour at, or just below, a boil, keeping the material below the surface of the liquor as much as possible.

Pyrol Green 3 G possesses the valuable properties of the other sulphur greens.

Recipe No. 31.

Blue on Cotton Yarn.

Pyrol Blue 2 B on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Pyrol Blue 2 B.
(C. Bischoff & Co., 451 Washington St., New York.)
10 lbs. Sodium Sulphide (Crystals).
5 lbs. Soda Ash.
70 lbs. Common Salt.

Dye at, or just below, a boil for one hour, keeping the material below the surface of the liquor as much as possible.

Pyrol Blue 2 B possesses the excellent properties of the sulphur blues.

Recipe No. 32.

Blue Black on Worsted Yarn.

Diamond Blue Black G on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Diamond Blue Black G.
(Continental Color & Chemical Co., 128 Duane St., New York.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter yarn at 180° F., boil ½ hour and then add

2 lbs. Sulphuric Acid

and continue the boiling until the bath is exhausted, then add

2 lbs. Potassium Bichromate

to the dye bath and boil ¾ of an hour longer.

Diamond Blue Black G possesses very good fastness to practically all of the common color-destroying agencies.

Mill News.

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires facts and gossip of the trade are referred to the Textile Advance News, issued weekly by the publishers of the Textile World Record, at $15.00 per year.

COTTON.

New Mills.

Alabama, Talladega. The Talladega Oil Mill has added a rope mill during the past year.

Connecticut, Meriden. The Connecticut Braid Manufacturing Co. has been incorporated with capital stock of $15,000. Hoskar Frank, Emil T. Fritz and Abraham Coplan are among those interested in the new company, which will equip a new plant for manufacturing braids.

*Massachusetts, Fall River. The Lincoln Manufacturing Company has increased the capital stock from $600,000 to $700,000. This company, which will start operations with 50,000 spindles, will eventually increase that number to 127,000.

Massachusetts, Fall River. It is reported that Julius L. Lanceault, John Bury and Geo. E. Chadwick are interested in erecting a factory for manufacturing braids and tapes, under name of the Columbian Narrow Fabric Co.

*Massachusetts, New Bedford. Lewis E. Bentley will be superintendent of the Quansett Spinning Company.

*Massachusetts, Newburyport. Operations will start about March 1st by the Warner Cotton Mills, operating plant formerly known as the Victoria Mills. This plant is equipped with 5,400 mule and 16,576 ring spindles and will make cotton yarns, up to 26s. M. C. Taylor is president of the company; P. T. Jackson, Jr., treasurer and Lewis Dexter, Jr., agent. Product will be sold through the Boston Yarn Co.

*Missouri, Kansas City. The Kansas City Cotton Mills, which proposed starting up their new plant Jan. 1st, have been somewhat delayed on account of not receiving first shipment of looms in due time.

*New York, Le Roy. The Le Roy Cotton Mills are now in full operation.

*North Carolina, Bessemer City. The Smith Cotton Mill Co., recently reported incorporated with capital stock of $100,000, has started work on erection of the new mill. It is expected to have the plant ready to start operations about May, with an equipment of 6,000 ring spindles, making 20s to 30s yarns. J. A. Smith is president and treasurer of the concern.

*North Carolina, Charlotte. The Mayes Mfg. Co. expects to have their new mill in operations about March 1st, with an equipment of 17,328 ring spindles, making 40s to 80s combed single and ply yarns.

*North Carolina, Fayetteville. The Victory Manufacturing Co. will probably start operations in their new mill about Feb. 1st.

*North Carolina, Lumberton. Operations have been started by the National Cotton Mills, making hosiery and mixed colored yarns. This mill is equipped with 6,240 spindles. Col. N. A. McLean is president of the company; Geo. B. McLeod, vice president; A. P. McAllister, secretary and treasurer, and J. W. Kaneer, superintendent.

*Oklahoma, Guthrie. The cotton mill at this place has been started with half of the full capacity. As soon as business demands, the balance of the equipment will be put in operation. J. A. Statum is general superintendent of the mill.

*Tennessee, Nashville. A bond issue of $200,000 has been decided upon by the stockholders of the Wariotto Cotton Mills, in connection with plans for the new equipment, 20,000 spindles and 500 looms, which they are installing in the plant of the old Tennessee Manufacturing Co. It is expected that operations will be started by the end of February.

Enlargements and Improvements.

Alabama, Huntsville. The Dallas Manufacturing Company is to replace 316 wide Colvin looms with new Draper looms.

Connecticut, Danielson. The Danielson Cotton Co. has received two more filling frames from the Whitin Machine Works; this makes ten new frames within the last year. Expect to go onto finer grade of goods soon, making 50s warp and 70s filling. Combers will also be added later.

Georgia, Cartersville. The American Textile Company has recently installed 5,000 spindles and 120 looms.

Georgia, Columbus. The Eagle & Phoenix Mills have been reported as having purchased the Lowell Cotton Warehouse near here and propose building an additional mill.

Georgia, Dallas. The Paulding County Cotton Manufacturing Co. is reported to double the equipment of the plant, at present 5040 spindles.

*Georgia, Monroe. Work has been practically completed on the addition to the Walton Cotton Mill, and machinery is about to be installed.

*Maine, Biddeford. The extension to Mill No. 2 (Laconia Division) of the Pepperell Mfg. Co.'s plant is simply addition of another story to present building, to relieve congestion of other machinery. All contracts have been placed.

*Maine, Saco. A new boiler house is to be built in the spring by the York Manufacutring Co. Eventually they propose housing all the boilers used by the company in the new building. They will also erect a new mill, 350 by 80 feet, 4 stories.

Massachusetts, Blackstone. The Blackstone Manufacturing Co. is to make various additions to

the mill, increasing capacity, etc. A new 260 h. p. boiler will be installed. 7,000 Draper patent spindles added in the spinning department and 150 new looms put in.

Massachusetts, Fall River. The Davol Mills are extending their system of humidifiers installed by the American Moistening Co., Boston, Mass.

*Massachusetts, Fall River. Plans have been prepared for a new five-story and basement mill 274 by 135 feet for the Kerr Mill. This building will be adjacent to the present plant and will have an equipment of about 70,000 spindles. A number of other changes will be made.

*Massachusetts, Lowell. The Boott Mills are to increase the capital stock to $1,000,000 for purpose of increasing plant.

Massachusetts, New Bedford. Plans have been prepared for an addition of a new weave mill for the Grinnell Mills.

*New Hampshire, Nashua. The Nashua Manufacturing Co. has installed 106 new looms in the new addition recently completed.

*North Carolina, Cornelius. The Cornelius Cotton Mills advise us that they expect to put in a finishing plant some time during the year for purpose of finishing their production of ginghams.

*North Carolina, Fayetteville. The Tolar, Hart & Holt Mill will install 1,368 new spindles in the mill in March. Although an addition is contemplated, they have not yet decided upon details.

*North Carolina, Graham. The Sidney Cotton Mills will start on full time February 1st. A new spinning plant has recently been added.

North Carolina, Greensboro. The Pomona Cotton Mfg. Co. is to be enlarged and contracts have been placed for the additional machinery.

*North Carolina, McAdenville. Work is nearing completion on the new addition to the McAden Mills and the plant will be ready for occupancy within a short time. Plant is operated by electricity.

Pennsylvania, Philadelphia. The Stenton Mills Co. is installing additional looms for weaving tapes.

Rhode Island, Manville. The Manville Company will install a new 2,000 h. p. engine in the Social Mill.

*South Carolina, Anderson. The Toxaway Mills are installing the additional machinery (about 5,000 spindles and 125 looms) in the plant.

*South Carolina, Greenville. The Brandon Mill has equipped the plant with electricity.

*South Carolina, Charleston. The Royal Bag & Yarn Mfg. Co., reported to increase capacity of the plant, will put in 2,500 new spindles, with necessary card room machinery, for which all contracts have been placed.

South Carolina, Rock Hill. The Aragon Cotton Mills have contracted for the entire equipment of their mill with the American Moistening Co.'s system of humidifiers.

*Texas, Waxahachie. Work is nearly complete on the additions at the Waxahachie Cotton Mills. The weaving will be done in the old building while the new one will be used for the spinning, etc. A new warehouse will also be built.

Mills Starting Up.

*Alabama, Eufaula. Arrangements have been made whereby the Chewalla Cotton Mills, which have been closed for a few months, will resume operations. B. B. McKenzie will have charge.

*Tennessee, Trenton. Operations have been started in the Trenton Cotton Mills, now making yarns.

WOOLEN.

New Mills.

New Jersey, Passaic. The New Jersey Spinning Company has been organized for purpose of spinning worsted yarns (French system).

*Rhode Island, Providence. Work will soon start on erection of a new mill, at Olneyville, for Herman Waterhouse. A new company, known as the Waterhouse Worsted Co., will operate same. The main building will be 200 by 60 feet, three stories, with a three-story ell, 158 by 48 feet, and a one-story building, 125 by 55 feet, for wet finishing and dry room. About 100 looms will be installed.

*Rhode Island, Wickford. A new company, name of which has not yet been announced, will be organized to operate the Wickford Mills, making fine worsteds. William H. Parr will be president, superintendent and boss dyer of the new company; Mark Hough (of the Enterprise Dye Works), Woonsocket, secretary, and Edwin C. Gammage, formerly with the Perseverance Worsted Co., treasurer, general manager and designer.

Enlargements and Improvements.

Connecticut, Rockville. The New England Manufacturing Company has completed a new dye house.

*Illinois, Lacon. Work has been started on erection of an addition to John Grieves Sons' mill. They will install 24 new looms and 6 sets cards, which will give the plant a total of 11 sets cards and 44 looms. New addition is expected to be completed about July 1st. Mill makes meltons, thibets, etc.

*Maine, Sanford. Jagger Bros. will remove their present plant to the new mill under way at South Sanford as soon as building is completed. They expect to be located in their new quarters by the end of March.

*Massachusetts, Middleboro. The Nemasket Mills, reported having ordered 70 new looms to be installed in the plant, advise us that these are not additional, but will replace old looms.

Massachusetts, North Bellingham. The Charles River Woolen Company has recently installed 50 new looms and 5 new fulling mills. No. 3 mill has been overhauled and put in operation.

Massachusetts, Saxonville. The Saxonville Mills are installing 10 new Crompton & Knowles blanket looms.

*Massachusetts, West Millbury. The Millbury Worsted Co. advises us that they are adding 12 new looms, making a total of 30 in the plant.

*Michigan, Sault Ste Marie. The Soo Woolen Mills have started work on erection of their new mill, which will be about 100 by 80 feet, three stories high. A bridge will be built connecting the two mills.

New Jersey, Camden. The B. F. Boyer Co. has removed to their new mill at River Ave. and Marlton St. and have already started up a large part of the machinery.

*New Jersey, Camden. The Highland Worsted Mills, reported to build an addition to the plant, will install 20 spinning frames averaging about 4,000 spindles.

*New York, Amsterdam. The Mohawk Mills have completed their new tapestry and velvet mill and have installed about 60 per cent. of their machinery. This building is 300 by 80 feet, five stories, brick.

New York, Little Falls. Charles W. Becker is building an addition to his shoddy plant which will give him 15,000 additional feet of needed space.

Pennsylvania, Philadelphia. S. B. & B. W. Fleicher, manufacturers of braids and woolen and worsted yarns, with mills in Manayunk and 25th and Hamilton Sts., has recently purchased the properties at 2456 to 2608 Callowhill St., the entire lot measuring 171 feet 6 inches by 278 feet 1 1/8 inches on which are one four-story, one three-story and one two-story factory, a two-story engine and boiler house and two-story stable, for the sum of $60,000. The firm has been using the buildings for the past few years as warehouses.

*Pennsylvania, West Conshohocken. We have been advised by the Merion Worsted Mills that they expect to rebuild their plant as soon as possible, but what additional buildings, if any, are to be erected, they are not quite ready to state.

Rhode Island, Oakland. The Oakland Worsted Co. is about to install a new 125 h. p. tubular boiler in the plant.

Rhode Island, Providence. Foundations have been completed for a 3 story warehouse to be built, 120 by 80 feet, brick, for the Weybosset Mills.

Rhode Island, Woonsocket. The Lafayette Worsted Co. has started installing 12 new worsted twisters. Additional help will also be employed.

Mills Starting Up.

*Massachusetts, Athol. Edward S. Handy, whose satinet plant was recently destroyed by fire, is making arrangements to resume business in the old Partridge factory at Partridgeville.

*Massachusetts, Charlton City. Akers & Taylor have started operations in full at their mill and are making tourist cloakings.

Massachusetts, Uxbridge. Operations have been resumed in the Hecla Mill of the American Woolen Co., closed for about six weeks.

*New York, Seneca Falls. The Seneca Falls Woolen Co. has been incorporated with capital stock of $125,000 and will operate plant at this place, equipped with 9 sets cards and 40 looms. Robert G. Henderson is president of the company and superintendent and Thomas W. Pollard, treasurer. Plant is equipped with a dye house. Product will be sold by Vietor, Achelis & Co., New York.

Mills Shutting Down.

Minnesota, Delanco. The woolen mill at this place has been closed for a short time.

For Knitting Mill News, see Knitting Department.

SILK.

New Mills.

*New York, Gloversville. Work has been about completed on the new five-story brick mill, 90 by 30 feet, for Wm. Lefi & Co., for manufacturing silk cloth used in men's and ladies' silk gloves and lining. The second floor will contain the offices in front with weaving department in the back. The third floor in front will be the making room and the back for dining room for the operatives. The fourth and fifth floors will be used as cutting rooms and for storage purposes.

Washington, Seattle. The Seattle Silk Manufacturing Co. is to be incorporated with capital stock of $100,000 for purpose of operating a silk mill. They will remove the looms at Bellingham to this place. Moncrieffe Cameron, of the German-American Knitting Co., will be president of the new concern and Henry A. Bammert, treasurer.

Enlargements and Improvements.

*Connecticut, South Manchester. Cheney Bros.' new dye house will soon be ready to start operations.

*Connecticut, Willimantic. The Windham Silk Company is having plans prepared for a new silk mill, the dimensions of which will be 280 by 60 feet, three stories, brick.

*New Jersey, Burlington. The Bachmann Braid Mfg. Co. will remove to this place from their plant at Philadelphia, April 1st. The present equipment of 60 braiding machines will be increased to 266 at new location.

New Jersey, Paterson. Migel & Blum have taken the second floor of Van Ness Bros.' new building and will install 29 new ribbon looms and other machinery.

New Jersey, Paterson. Repairs have been started on Henry Doherty's mill, recently damaged by fire and plant made ready for occupancy. Operations will be resumed as soon as possible.

MISCELLANEOUS.

*Massachusetts, North Adams. A new company, with capital stock of $1,000,000, corporated under Massachusetts laws, has been organized to operate the Windsor Print Works. Operations will be started up within a few weeks, with David A. Russell as manager of the plant.

Massachusetts, North Brookfield. The Indian Orchard Flax Co. has been shut down for the present.

*New Hampshire, Milford. The Middlesex Linen Co., reported to be established here, will be incorporated as soon as Mr. J. W. Pead (Lowell), who is interested in the project, returns from abroad. A plant with an equipment of 100 looms is proposed, with finishing equipment, for making union and linen huck towels. The machinery has been practically all purchased and it is expected that operations will be started about May 1st.

New Hampshire, Somersworth. An addition, which will double present capacity, will be made to the dye house at the Great Falls Bleachery & Dye House.

New York, Binghamton. Dr. W. M. Sharp of this place is interested in the establishment of a knitting mill here. The plant will be equipped for weaving only, 32 looms, the bleaching to be done outside at present. Plant is practically ready to start up.

Pennsylvania, Philadelphia. A permit has been issued to John M. Kennedy, 1001 Chestnut St., for the erection of a two-story brick dye house at the northwest corner of Emerald and Cornwall Sts. The dimensions of the building are 52 by 131 feet and will cost $4,000.

Pennsylvania, Reading. Thomas A. Williams, until recently located at Norristown, is about to start up a plant for the dyeing and bleaching of knit goods to be known as the Relay Dye Works, at 10th and Exter Sts. The necessary equipment has been ordered and it is expected to have the plant in full operation by February 1st.

*Rhode Island, Ingrahamville. Operations will start this month in the Solway Dyeing & Textile Company's new plant.

Rhode Island, Pawtucket. The English Finishing Company has been incorporated with capital stock of $150,000 and will operate a plant manufacturing glazed yarns and thread. Edward Sherlock, Walter Shute (Boston), Geo. Fredenburg, Pawtucket and A. Kingsley, Wickford, R. I., are interested.

FAILURES AND SUSPENSIONS.

New Jersey, Paterson. Harry C. Nightingale, president of the Paterson Mill Supply Co., has been appointed receiver for the Joseph White Silk Company.

New Jersey, Paterson. George Schmidt of New York has been appointed receiver for William Hamilton, silk manufacturer at this place.

New York, Milton. A petition in bankruptcy has been filed against Henry H. Bell's Sons Company by Einstein, Townsend & Guiterman, attorneys for some of the creditors. Robert Wilkinson has been appointed receiver. Company's liabilities are stated to be over $50,000, with assets of $10,500.

North Carolina, Bessemer City. The Vermont and the Southern Mills have been closed and it is reported that application is to be made by the creditors for a receiver.

North Carolina, Charlotte. The Odell Manufacturing Co., operating a plant of 6 mills, has been placed in the hands of a receiver, viz: Caesar Cone, of Greensboro. The liabilities are placed at $600,000, with assets of more than $1,200,000. It is stated that the mills will probably continue in operation.

FIRES.

Mexico, Orizaba. Among the sufferers from the burning of the mill buildings at Orizaba is the Robert Schaellibaum Co. of Providence, R. I. Some of this firm's patent grids had arrived and were to be installed, being placed meanwhile in the stores which were burned. As the terms upon which this company supply their grids are subject to a thirty days' trial, the loss falls on them.

New Jersey, Paterson. The Paterson Silk Mills have been badly damaged by fire, which started in the drying room.

Rhode Island, Auburn. The A. A. A. Spooling & Winding Company's weave plant has been destroyed by fire.

FACTS AND GOSSIP.

*Alabama, Eufaula. It is reported that the Chewalla Cotton Mills are to be sold.

*Arkansas, Little Rock. It is reported that Philadelphia parties are interested in establishing a cotton mill here, also Chicago parties in the location of a dye plant.

Connecticut, Greenwich. The Converting Company has been organized with capital stock of $50,000. Joseph H. Wright (New York), Wm. W. Farish (Montclair, N. J.), and Geo. A. Stafford (Greenwich), are among those interested.

Connecticut, Meriden. The New England Braid Co. and the Connecticut Braid Co., the latter recently organized, have combined and will be operated as the New England Braid Co. The capital stock is placed at $50,000. M. Cherniack is president; W. F. Fritz, vice president; E. F. Fritz, secreatry and H. Frank, treasurer and general manager.

Connecticut, South Coventry. The Washburn Silk Co. is operating a plant of 5,000 spindles on commission throwing. Company is capitalized at $16,000; H. K. Washburn is president and treasurer of the company and N. H. Washburn, superintendent.

*Georgia, Athens. The Southern Manufacturing Co., reported as contemplating doubling capacity of the plant, has not yet decided upon the extensions.

Maine, Biddeford. The Pepperell Mfg. Co. has placed a large order for humidifiers with the American Moistening Co., Boston, Mass.

Massachusetts, Blackstone. It is reported that the American Woolen Co. contemplates building a plant here for purpose of furnishing yarns to the Saranac Mill.

*Massachusetts, Concord Junction. The Strathmore Worsted Mills, incorporated with capital stock of $150,000, are operating plant formerly known as the Concord Mills, with equipment of 1 narrow and 92 broad looms and 1,000 worsted spindles. Andrew Adie is president of the company; James D. Colt, treasurer; Wm. Naismith, agent and buyer and A. B. Crowell, superintendent. Product, men's worsted wear, is sold through E. B. Moore & Co., New York.

Massachusetts, Fall River. At the annual meeting of the stockholders of the Weetamoe Mill to be held January 23d, a proposition will be submitted to reduce the capital stock from $550,000 to $500,000.

Massachusetts, Fall River. Charles B. Cook has been elected president of the Algonquin Printing Co. to succeed Robert T. Davis.

*Massachusetts, Lowell. The Halebrook Mfg. Co., capitalized at $150,000, is operating a plant on broadcloths, kerseys and thibets, with equipment of 12 broad looms. John J. Deavitt is president and superintendent of the company and D. N. C. Hyams, treasurer.

Massachusetts, Lowell. The Boott Mills are making a large extension of their moistening system, adopting the American Moistening Company's humidifiers.

Massachusetts, Lowell. The Massachusetts Cotton Mills have placed a repeat order for humidifiers with the American Moistening Co., Boston, Mass.

Massachusetts, Methuen. The Tremont Worsted Company has been incorporated with capital stock of $100,000 and will continue plant now operating under that name. Simeon Gaunt is president of the company and Alfred C. Gaunt, treasurer.

Massachusetts, New Bedford. The Page Manufacturing Co., John W. Knowles, treasurer, has placed a large order for humidifiers with the American Moistening Company, Boston, Mass.

*Massachusetts, Newburyport. The Victoria Mills, recently reported taken over by a new concern, will be operated under the name of the Warner Cotton Mills. P. T. Jackson, of Lowell, will be treasurer of the company and Louis Dexter, Jr., agent.

*Massachusetts, North Adams. It is reported that arrangements have been completed and that a new company will be incorporated to operate the Windsor Print Works.

Massachusetts, Uxbridge. Operations will soon be resumed in the Stanley Woolen Co.'s mill, closed for the past two months. A high grade of woolens will be made.

*Massachusetts, Worcester. The Williams Mill at this place has been purchased by Charles N. Prouty of Spencer. Mr. Prouty has also purchased the Buffumville Mill at Buffumville, Mass. It is stated that a company will be organized and the mills put in operation by spring.

*Mississippi, Aberdeen. The Business League has been erroneously reported as interested in establishing a cotton mill here.

Mississippi, Senatobia. It is reported that the Tate County Cotton Mills have been incorporated with capital stock of $100,000 for purpose of manufacturing various kinds of cotton goods. Among those mentioned as interested are: J. F. Dean and J. Walker Hood.

*Mississippi, Wesson. The Mississippi Mills have been taken by the Lane-Maginnis Mills Corporation and the three mills will most likely be incorporated under the name of the Textile Mills Corporation. The Wesson plant will continue to be known as the Mississippi Mills, a branch of the Textile Mills Corporation.

New Hampshire, Concord. It is reported that Mr. Thayer, of the First National Bank and Mr. Hollis, of the Electric Light & Power Co., are interested in locating a French worsted yarn plant of about 4,000 spindles.

New Hampshire, Manchester. The Amoskeag Mfg. Co. have placed their order for the Bell Humidifying System with the Bell Pure Air & Cooling Co., New York City.

New Jersey, Beverly. The Beverly Textile Manufacturing Co. has been incorporated with capital stock of $25,000 for purpose of manufacturing quilts, blankets, damask table covers, robes, etc. F. R. Hansell, John A. MacPeak and William F. Eidel are mentioned as interested.

New Jersey, Burlington. The Bachmann Braid Manufacturing Co., Philadelphia, has purchased the property formerly operated by the Burlington Knitting Mill and will remove plant to same. Operations are expected to start soon.

*New Jersey, Edgewater. D. A. Higgins is president and treasurer of D. A. Higgins & Co., recently incorporated to take over business of D. A. Higgins. W. A. Frerichs is secretary of the company, and W. C. Frerichs, superintendent. This plant has capacity of 10,000 lbs. woolen or worsted yarn per day.

New Jersey, Jersey City. The Manhattan Mfg. Co., a copartnership between Charles Volkle and David Long, has been dissolved. Mr. Long has disposed of his interest in the concern to Mr. Volkle, who will continue the plant under name of the Manhattan Mfg. Co. This plant is run on ribbons and novelties, vestings, silks, velvets, etc.

*New Jersey, Passaic. The New Jersey Spinning Co., recently incorporated for purpose of spinning worsted yarns, French system, also combing, will have an equipment of 50,000 spindles. E. Ruckdeschel is president of the company; C. Bahnsen, treasurer; Oscar Dressler, vice

president; R. Kleinjung, secretary and general manager. Product will be sold direct.

New Jersey, Paterson. The Post & Sheldon Corp. (Slatington, Pa.), contemplates returning to this city and have taken floor space in mill on Ellison Street.

*New Jersey, Paterson. The machinery of the Banner Silk Co.'s plant, recently in hands of V. Fiske Wilcox, receiver, has been sold to Hoffman & Hoos, and will be taken by them to their mill at West New York, N. J.

New Jersey, Paterson. The plant operated by Paul Landau, which was to have been sold by the sheriff, is now in the hands of a receiver.

New Jersey, West Hoboken. Max Fix has purchased Jacob Haas' interest in the firm of Haas & Ufert and the firm will be continued as Fix & Ufert.

New Jersey, West New York. Hoffman & Maas are operating a plant at this place with equipment of 110 looms, making broad silks. Produce is sold direct.

New York, Brooklyn. P. Schleifer is operating the Manhattan Knitting Mills on high grade sweaters, blouses, norfolks and Buster Browns with 4 knitting and 5 sewing machines at 200 Meserole St. Reports a good business.

New York, New York. The American Silk Co. is a new concern to be incorporated with capital stock of $22,500,000 and will take over a number of large silk concerns, upon which options are now held by H. W. Bennett & Co., (20 Broad Street.) Among the large concerns interested in the new combination is the York Silk Manufacturing Co.

New York, New York. The Wierty Silk Mfg. Co. has been reported incorporated with capital stock of $15,000. Abraham Cohn, Charles Wierty and George Cohn are the incorporators.

New York, New York. The Kluge Weaving Co. is reported as having purchased property at West New York, upon which they will erect a large mill.

New York, Schaghticoke. The Schaghticoke Mills Co.'s plant is in the hands of C. H. Tolhurst and C. P. Roy, receivers. Nothing definite can be said at this time regarding the plant.

New York, Skaneateles Falls. The Waterbury Felt Company has been reported incorporated with capital stock of $100,000. The machinery formerly operated by the Mohawk Valley Felt Co. at Frankfort has been purchased. H. T. Waterbury (Oriskany), Geo. L. Bradford (Utica), and James E. Ratchford (Syracuse) are mentioned as interested.

New York, Waterford. Charles C. Ormsby and Thomas F. Morris are reported interested in establishing a mercerized silk mill in the building formerly occupied by the Clyde Knitting Mill.

North Carolina, Bessemer City. At meeting of the directors of the Vermont Mills, J. J. Ormand was elected treasurer, succeeding S. J. Durham.

North Carolina, Bessemer City. At meeting of the directors of the Whetstone Cotton Mills Co., Dr. D. A. Garrison was elected president and J. J. Ormand, treasurer, to succeed S. J. Durham, resigned.

North Carolina, Charlotte. The Mecklenberg Manufacturing Company has been incorporated with capital stock of $250,000.

North Carolina, Clayton. E. L. Hinton and associates propose organizing a company to build a cotton mill at this place.

*North Carolina, Concord. The Magnolia Cotton Mills Co. has been incorporated with capital stock of $25,000 and will take over the mills operated by J. M. Odell, continuing manufacture of cotton yarns and bed spreads. J. M. Odell is president of the new company and Fred C. Odell, treasurer and buyer. Plant has a total of 3,800 ring spindles and 40 Jacquard looms.

*North Carolina, Cornelius. The Gem Yarn Mills have been reported incorporated with capital stock of $75,000, of which about $22,800 has been subscribed. J. B. Cornelius and C. A. Sherrill are among those mentioned as interested.

North Carolina, Davidson. A meeting of the stockholders of the Linden Cotton Mill will be held Jan. 14th. It is stated that important business matters will be considered.

North Carolina, Fayetteville. The Victory Manufacturing Co. has placed their order for humidifiers with the American Moistening Co., Boston, Mass.

North Carolina, Monroe. Work is reported to start shortly on the erection of a new mill for the Icemorlee Cotton Mills.

*North Carolina, Raleigh. Wm. H. Williamson is president and treasurer of the Pilot Cotton Mills Co., recently reported incorporated with capital stock of $500,000 to succeed Jas. N. & W. H. Williamson. N. T. Bacon is superintendent of this plant. The mill is run on colored shirtings, chambrays, etc., and equipped with 7,710 ring spindles and 325 looms.

North Carolina, Raleigh. The Pilot Cotton Mills Company has been incorporated with capital stock of $50,000 to continue the plant operated as the Pilot Cotton Mills, J. N. & W. H. Williamson, proprietors.

Pennsylvania, Clearfield. It is reported that local capitalists connected with the Board of Trade are interested in the establishment of a silk mill at this place. $20,000 has been reported subscribed.

Pennsylvania, Philadelphia. A charter has been asked for C. H. Masland & Sons, with the following incorporators: Chas. H. Masland, Maurice E. Masland, Frank E. Masland, Chas. W. Masland and J. Wesley Masland. This company operates one of the largest carpet and rug manufacturing plants in this city and is located at Amber, Westmoreland and Collins Sts.

Pennsylvania, Philadelphia. David S. Brown and Crosby M. Brown, trading as Crosby M. Brown & Co., proprietors of the Coaquanock Mills, 69th St. and Haverford Ave., in which they manufactured woolen goods with 6 sets and 120 looms,

have recently notified the trade that the firm has been dissolved on account of the death of Crosby M. Brown and that the business, in the future, will be carried on by David S. Brown and J. Morton Brown under the name of David S. Brown & Son.

Pennsylvania, York. The York Silk Manufacturing Co. is reported to take over the Monarch Silk Co.'s plant. This is said to be the start of a project to get the various mills of the York Silk Mfg. Co. under control of the American Silk Company, a new corporation.

Rhode Island, Pawtucket. The plant of the James Brown Machine Co., formerly builders of textile machinery, is to be sold at auction with the contents on January 31st.

Rhode Island, Thornton. Harry Hartley & Co., Inc., has been incorporated with capital stock of $500,000 and will continue operating the plant of which Mr. Hartley has hitherto been sole proprietor.

*Rhode Island, Woonsocket. Desurmont & Co., of Tourcoing, France, are reported to be the new company to establish a worsted mill at this place.

Rhode Island, Woonsocket. The Colchis Mill, owned by the Glenark Knitting Company, has been reported sold, but the names of parties interested have not been officially made public.

*Rhode Island, Woonsocket. The Colchis Mill, owned by the Glenark Knitting Co., has been sold to the Woonsocket Worsted Mills.

South Carolina, Blacksburg. It is reported that a project is under way for erecting a new cotton mill at this place, using the latest improved machinery.

South Carolina, Cowpens. The Ora Manufacturing Company is reported to be incorporated with capital stock of $30,000 for erecting a new cotton mill. Among those mentioned as interested are S. B. Wilkins, W. L. Jenkins, W. E. Patton and W. Y. Wilkins.

South Carolina, Gaffney. J. L. Daniels is reported interested in organizing a new company for establishing a mill to produce bagging, cloth, paper, etc., from cotton stalks.

South Carolina, Goldville. The Banna Manufacturing Co. has been incorporated with capital stock of $75,000 to operate the Banna Cotton Mills. Geo. M. Wright (Union) and J. P. Mathews (Columbia) are mentioned as interested in the new organization.

South Carolina, Greenville. The Greenville Cotton Mills Co., which have been reported incorporated with capital stock of $20,000 is not a company to build and manufacture. They will sell job factory products generally.

*Tennessee, Jackson. The Jackson Woolen Mills, which have rebuilt their plant destroyed by fire, will increase the capital stock from $60,000 to $100,000.

Tennessee, Harms. It is reported that $50,000 has been subscribed toward a cotton mill proposed at this place.

*Texas, Abilene. We have been advised that while no company has been organized to establish mill at this place, that two different plans are in contemplation. One is by W. H. McGoldrick and associates, embodying a $400,000 plant; the other by local parties figuring on a $150,000 plant.

Texas, Austin. Philip Jones, of Tyler, is reported interested in organizing a company with capital stock of $100,000 to build a cotton mill here.

Texas, Bonham. The Bonham Cotton Mills are reported considering making additions of machinery, etc., to the plant.

Texas, Hillsboro. The Hillsboro Cotton Mills are reported as making preparations to make extensive improvements to the plant, including installation of additional machinery.

Texas, Sinton. It is reported that Charles P. Taft of New York City is interested in a project for establishing a cotton mill at this place.

*Vermont, Bridgewater. D. W. Farnsworth, of Deering, Milliken & Co., New York, is president of the Bridgewater Woolen Co., recently reported incorporated and to continue the plant operated by F. S. Mackenzie. Harold M. Stevens, Portland, Me., is treasurer and manager.

*Wisconsin, Eau Claire. O. H. Ingram is president of the Eau Claire Linen Mill Co., capitalized at $50,000, a reorganization of the old company. C. A. Chamberlin is treasurer of the company and Jno. C. Cady, agent and buyer. This plant is equipped with 52 looms and 336 flax spindles for making linen crash and Turkish toweling.

Washington, Seattle. The Yule Spinning & Twine Manufacturing Co. has been incorporated with capital stock of $100,000 by Watson Allen, Roy Kinnear and L. Frank Brown.

Personals.

John Crowther, formerly superintendent of the Allen Mills, Rochester, N. Y., has accepted a position as superintendent of the Wakefield Mfg. Company, Wakefield, R. I., succeeding Firth Rollison, who resigned to accept a position at the Paton Mfg. Company, Sherbrook, Canada.

Everett Jones, overseer of dressing and spooling at the Peacedale Mfg. Company, Peacedale, R. I., has resigned.

Archibald W. Scott, who resigned his position with the Plainfield Woolen Company, Central Village, Conn., has accepted the position as superintendent for Edward T. Steel & Company, Keystone Woolen Mills, Bristol, Pa.

Geo. W. Dowding, overseer of weaving for the Hockanum Company, Rockville, Conn., has severed his connection with that firm after fifteen years of valuable service.

John Manion has been appointed overseer of the spinning department of the Stevens Mill, Fall River, Mass. Owen Lynch, head clerk in the office of the Stevens Mill, has been assigned the duties of purchasing mill supplies.

Patrick McKenna has resigned his position as overseer of the carding department, Pocasset Mils, Fall River, Mass.

Wm. A. Trask, superintendent of the spinning mill of the Chase Cotton Mills, Fall River, Mass., has been appointed manager of the Chace No. 3 Mills of the Burlington plant, Burlington, Vt. This includes the management of the weaving mill at the Lower Pine Street Mill and the spinning mill on Mill Street.

Louis F. Bentley has accepted a position with the new Quansett Spinning Mills, New Bedford, Mass. He was connected with the Bennett Mills when it was run under the name of the Bennett Mfg. Company and when the Columbia Spinning Company was formed, Mr. Bentley was appointed superintendent and manager of both mills. He served in the capacity as manager of both concerns until they went into the hands of a receiver. He continued to act as superintendent under the New England Cotton Yarn Co. at the Bennett Mills. In 1894, he was succeeded by Thos. F. Glennon.

Geo. F. Spencer of Riverpoint, R. I., has accepted a position as foreman of the finishing department for the Cranston Print Works, Cranston, R. I.

Robert Dawson, assistant superintendent for the Cocheco Woolen Mfg. Company, East Rochester, N. H., has resigned his position to accept a similar one with the Evansville Woolen Mills, Evansville, Ind. His successor at the Cocheco Woolen Mfg. Company is H. H. Hart of the Meriden Woolen Mills, Meriden, Conn.

Daniel Sweeney has accepted the position as second hand of ring spinning and twisting for the Boston Mfg. Company, Waltham, Mass., Albert L. Walker having resigned.

Firth Rollison, the retiring superintendent of the Wakefield Mills, Wakefield, R. I., was presented with a diamond ring by the help employed. Thos. Connelly, boss finisher, in behalf of the members, made the presentation speech. Mr. Rollison was well liked by the help in the mill and there is regret at his departure. Mr. Rollison thanked the donors and assured them that the relations existing between them and himself would always be fondly cherished in his memory. John W. Crowther, who is to take Mr. Rollison's place, will take up his new duties about February 1st.

Ernest Rhodes, formerly assistant superintendent and designer at the Indian Spring Woolen Mills, Madison, Me., has accepted the position as assistant superintendent for the Somerset Worsted Mills, East Madison, Me.

Thomas Smith, overseer of weaving for C. A. Root & Company, Uxbridge, Mass., has resigned his position.

James H. Southern, formerly overseer of finishing at the Gulf Woolen Mills, Conshohocken, Pa., has resigned and returned to his home in Hinsdale, Mass.

John H. Johnson, who held the position as overseer of spinning for the Oakland Mfg. Company, Oakland, Me., has again re-entered the employ of this company as overseer of spinning.

D. G. McLaren, superintendent for the Grand Rapids Underwear Company, Grand Rapids, Mich., has resigned.

F. A. Marble, who has been with Strong Hewitt Company of North Adams, Mass., for several years, will have charge of the office of the new Central Worsted Company of Central Village, Conn., January 1st.

Ernest Hill, formerly overseer of spinning at the Dawson Mfg. Company, Holden, Mass., has accepted a position as overseer of spinning at the Saxtons River Woolen Mills, Saxtons River, Vt.

Samuel Fost, overseer of beaming at the Fall Company's Mill, Norwich, Conn., has resigned. Chas. N. Taylor, overseer of dyeing for this company, has also tendered his resignation.

John A. Thomas, overseer of weaving at the Peacedale Mfg. Company, Peacedale, R. I., has tendered his resignation to take effect January 12.

W. H. Broadhead has succeeded Archibald W. Scott as superintendent of the Plainfield Woolen Company, Central Village, Conn. He formerly held the position as designer at this mill.

Alfred Stokes has accepted the position as overseer of weaving for C. A. Root & Company, Uxbridge, Mass. He was formerly employed at the Farwell Worsted Mills, Central Falls, R. I.

Arthur Corey, overseer of weaving at the Hudson Blanket Mills, Hudson, Mass., has decided to remain with this company.

John A. Conant retires as superintendent of the throwing department of the Holland Silk Mills, Norwich, Conn. He is to be succeeded by his son, J. Blorine Conant, who has had charge of the doubling department. Mr. Conant is one of the oldest silk manufacturers in New England, his connection with this industry dating back to 1844.

Alfred Zeigler has resigned his position with the Peacedale Mfg. Company and taken one as designer with the Oregon City Mfg. Company, Oregon City, Ore.

James McPherson, overseer of dyeing for the Upson Morton Company, Thompsonville, Conn., has resigned.

J. M. Wheaton, overseer of weaving at Nashua, N. H., has resigned and accepted a position at the Arlington Mills, Lawrence, Mass.

Geo. R. Race, superintendent and manager of the woolen mills of Edward T. Steel & Company, Bristol, Pa., has resigned and was presented with a silver loving cup by the help employed in the mill. The presentation was made by Den Guerin, the oldest employe.

C. H. Clifford, overseer of spinning at the Oakland Mfg. Company, Oakland, Me., has resigned and accepted a position at Plainville, Conn.

Edward Lee has accepted the position as overseer of reeling and spooling for the Anchor Mills, Harrisville, R. I. He was formerly engaged at Providence.

Thos. Buchan has accepted the position as overseer of spinning at the Cochrane Mfg. Co., East Dedham, Mass. He was formerly employed as overseer of spinning at Robert Blaikie Company, Hyde Park, Mass.

Wm. Pendergast has been engaged as boss carder for the Scrantic Mills, Hampton, Mass.

Eugene Herring of Greenville, S. C., succeeds W. G. West as overseer of weaving at the Abingdon Mills, Huntsville, Ala.

Elmer E. Stevens has accepted the position as overseer of the singeing department for the Martin Dye Works, a new concern that is to start January 21st at Bridgeton, N. J.

Edward M. O'Donnell, overseer of dyeing for F. Scott & Son's Mill at Saugus, Mass., has resigned.

James McGowan, cloth inspector at the Indian Spring Woolen Mills, has accepted a position at Skowhegan, Me.

Robert E. Reynolds has again re-entered the employ of the Merchant's Woolen Mill, East Dedham, Mass., as overseer of finishing. He was formerly employed by this company for a number of years in the same position.

Harry Gill has accepted a position as overseer of dyeing for the William Park Mills, Stafford, Conn. He was formerly engaged at the Springfield Woolen Mills, Springfield, O.

Thomas Spurr, overseer of dyeing for the William Park Mills, Stafford, Conn., has resigned.

Thos. F. Crocker has accepted the position as overseer of carding for the Central Yarn Company, Central Village, Conn. He was formerly engaged at the Glastonbury Knitting Company, Glastonbury, Conn.

S. F. Kirksey, president of the Slayden Kirksey Woolen Mills, Waco, Texas, has tendered his resignation after serving this firm twenty-four years. He was recently re-elected president of the company, but declined to serve because of the heavy responsibility and will retire from active business. Wm. W. Cameron was elected president and the directors will be W. W. Cameron, Frank Kirksey, F. W. Lake and W. J. and S. W. Slayden.

Warren E. Taft of Kenosha, Wis., has accepted a position as overseer of carding at East Brady, Pa.

A. E. Forward has resigned his position as overseer of carding for the Johns-Manville Company, Brooklyn, N. Y.

Frederick S. Camp, one of the most prominent mill men in eastern Connecticut, and agent of the Ponemah Mills, Taftville, Conn., took his life by shooting January 1st. He had been ill for several months with Bright's disease and had been despondent.

Gardner Leighton, master mechanic for the Amos Abbott Company's mill at Dexter, Me., has resigned and accepted a position with the Dunbarton Mills of the same town.

John J. Farrell, overseer of finishing at Curtis & Youland Mills, Wegatchie, N. Y., has resigned.

James Gallup, for the past fifteen years employed as night watchman at the Dalton Woolen Mills, Dalton, Mass., was found dead on the floor of the card room the morning of January 2 by Joseph Dailey, an employe of the mill. He had evidently been dead for several hours as the last record time.

Frederick Harmon, overseer of finishing for the Merchant's Woolen Mills, East Dedham, Mass., has resigned to accept a position as overseer of finishing at the Bay State Mills, Lowell, Mass.

Edward Barker has assumed the position as treasurer of the Barnaby Mills, Fall River, Mass. Harry French who has been connected with this mill for about twenty years as bookkeeper has severed his connection with this corporation.

Philip McTigue of Holyoke, Mass., has accepted a position at Evansville, Ind.

W. R. Franklin of Ipasca, Texas has been made superintendent of the Franklin Mills, Greers, S. C.

J. H. Jack, overseer of beaming at the Renfrew Mills, Adams, Mass., has resigned and will go into business outside of the mill. He has been succeeded by his second hand.

James Wade has resigned his position as overseer of weaving with the Brookville Woolen Mills, Brookville, Pa., and accepted a similar one with the East Brady Woolen Mills, East Brady, Pa.

Wm. J. Meanuy of North Andover, Mass., has accepted a position as superintendent of the Lombard Machine Company's Works at Worcester, Mass.

Henry Blair, of Fall River, Mass., has taken a position with the Lowell Machine Works, Lowell, Mass.

Thomas Sampson, formerly manager of the National Felt Company at East Hampton, Mass., is now connected with a large cloak store at Springfield, Mass.

S. T. Smith & Son, manufacturers of rugs, Philadelphia, Pa., presented to each employee who had worked for them one year or more with a fine rug.

W. H. Spellissey has been appointed manager of the Philadelphia agency of the Jenckes Spinning Company, Pawtucket, R. I.

James H. Cavanaugh, of Uxbridge, Mass., has accepted a position as loom fixer at Trenton, N. J.

U. A. Trash, for nineteen years superintendent of the Winooski Cotton Mills, Winooski, Vt., has been appointed manager of that mill and the Burlington Cotton Mills.

Converse Currier has accepted a position as second hand in the weaving department of the Sugar River Woolen Mills, Newport, N. H.

Chas. A. Wyman has accepted a position as loom fixer for the Devonshire Mills, Goffs Falls, N. H.

H. F. Wallace, of East Hampton, Mass., has accepted a position as second hand in the ring spinning department at the West Boylston Mfg. Company.

Robert Nichols, overseer of the finishing department of the Scotia Mills, Woonsocket, R. I., has severed his connection with that firm and accepted a position with the Mystic Mfg. Company, Mystic, Conn. On his retirement he received a handsome book-case and a marble clock by the help employed in his department, the presentation speech being made by Mr. McMichael.

Thomas Dugan, of the firm of Frank Dugan & Son, silk manufacturers of Paterson, N. J., died at his home January 11th in his 56th year. He had been in the silk business from boyhood and for many years was a Western representative of the large firm of Pilgram & Myer.

Chas. M. Heddle, who has been holding the position as designer for the Oakland Woolen Company, Oakland, Me., has severed his connection with that firm and accepted a position as superintendent of the Penman Mfg. Company, St. Hyacinthe, Quebec, Canada.

H. F. Tebeau has accepted a position as overseer of carding at the Gay Bros. Mill at Cavendish, Vt. He was formerly employed at Oakdale, Mass.

Wm. H. Clark, formerly employed at Housatonic, Mass., has accepted a position as overseer of carding at the Eagle Spinning Mills, Hamilton, Ontario, Canada.

Elmer E. Stevens has accepted the position as overseer of bleaching for Myrick & Rice, Bridgeton, N. J.

Thomas J. Duckworth has accepted the position as overseer of weaving with the Atlas Linen Co., Meredith, N. H. He was formerly employed at Pawtucket, R. I.

Sidney Rollins of Burlington, Vt., has accepted a position as assistant superintendent for the Riverside Mills, of the American Woolen Company, at Lebanon, N. H., succeeding P. O'Keefe, formerly of Rockville, Conn.

Jacob Hoexter, formerly engaged at the Lippett Woolen Company, at Woonsocket, R. I., has been engaged as assistant designer for the Robert H. Shaen Sons Company's Mill at Philadelphia, Pa.

Frank Stark has been engaged as superintendent of the No. 1 Mill of the American Woolen Company's plant at Moosup, Conn.

Robert Belcher of Fall River, Mass., has been appointed assistant superintendent of the Corr Mills at Taunton, Mass.

James McPherson, formerly dyer at the Bigelow Carpet Works, Clinton, Mass., has recently resigned his position at the Upson Martin Company, Thompsonville, Conn.

Wm. H. Duffy, overseer of the spooling department at the Iron Works No. 6 Mill, Fall River, Mass., has resigned after fifteen years of continuous service.

Richard F. Moore has accepted a position at the Upson Martin Company, Thompsonville, Conn., as overseer of dyeing.

John E. Daley, overseer of weaving for the Hopewell Mfg. Company, Worcester, Mass., has resigned after two years of service with this company.

John Lavallie has accepted a position as second hand in the ring spinning department of the Fletcher Mfg. Company, Providence, R. I.

Benjamin Robinson of Amsterdam, N. Y., has taken charge of the finishing for the National Felt Company, East Hampton, Mass.

Frank P. Morrison has secured a position as overseer of the cloth room for the Hill Mfg. Company, Lewiston, Me.

Fred Throp has resigned his position with the Allen Woolen Mills of Rochester and returned to the Allentown Woolen Company of Bellville, R. I.

Wm. A. Tierney has been elected president and S. A. Moore, secretary, of the William Moore Knitting Company, Cohoes, N. Y.

Walter Lancaster, formerly cashier of the Pacolet Mfg. Company of Spartansburg, S. C., is now treasurer of the Crescent Mfg. Company of that city.

V. T. Barber, formerly superintendent of the Slater Cotton Company, Pawtucket, R. I., is taking charge of the Conanicut Mills, Fall River, Mass., during the illness of C. E. Lindsley.

Lowell R. Breslin has been appointed general manager of the mills of the Ormsby Textile Company, Waterford, N. Y.

Harvey S. Green has retired from the knit goods firm of Geo. H. McDowell & Company, owners of the Cascade Mills, Cohoes, N. Y.

Chas. H. Lindloff, for many years president of the Bennington Knitting Company, but more recently assistant superintendent for the Alpha Knitting Mill, Schenectady, N. Y., has resigned and returned to his home in Bennington.

Ernest Howe has accepted the position as loom fixer for the Oneko Mills, New Bedford, Mass.

James Levins, recently overseer of weaving for T. F. Mullen, Stafford Springs, Conn., has accepted the position as overseer of weaving for the Bound Brook Woolen Mills, Bound Brook, N. J.

John Curren has accepted the position as overseer of spinning for the Meriden Woolen Company, Meriden, Conn., succeeding Thomas B. Odell.

Chas. E. Rothwell has resigned his position with the Nonotuck Silk Company, North Hampton, Mass., and will take a position as overseer of the stretching room in a mill at Putnam, Conn.

Robert Mowatt has accepted a position as overseer in the cloth room of a mill at Macon, Ga. He was formerly employed at the York Mills, Biddeford, Me.

Geo. Pettengill, overseer of finishing at the James J. Regan Mfg. Company, Rockville, Conn., has resigned.

Albion E. Gregory, overseer of weaving at the Salmon Falls Mfg. Company, Salmon Falls, N. H., for the past two years, has resigned his position and accepted a position at Lowell, Mass.

J. A. Code has accepted a position as overseer of carding at the No. 4 Mill, West Warren, Mass.

A. S. Levins has resigned his position as boss weaver with the Holbrook Cotton Mills, Millbury, Mass., and accepted a position with the Stevens Mfg. Company, Fall River, Mass.

Robert B. Scott of Hyde Park, Mass., has accepted a position as overseer of weaving at the Hartford Woolen Company, Hartford, Vt.

Robert Brown, overseer of carding at the Bristol Mfg. Company, Plainville, Conn., has resigned.

J. Clifford, formerly overseer of spinning at the Oakland Woolen Mills, Oakland, Me., is now in charge of the spinning at the Bristol Mfg. Company, Plainville, Conn.

David King of Rochdale, Mass., has accepted a position in charge of the picking room at the Wachusett Mills, Worcester, Mass.

Chas. Cobbett, overseer of carding at the Atlas Linen Company, Meredith, N. H., has resigned and accepted a position at Tilton, N. H.

J. H. Cardow has resigned his position with the Ingram Yarn & Dyeing Company, Astoria, N. Y.

James Bouley, overseer of carding at the Beaver Brook Mills, Collinsville, Mass., has resigned and been succeeded by John Wicks, formerly employed at C. B. Alling's Mill, Derby, Conn.

F. G. Cuttle has resigned his position as superintendent of the dyeing and finishing department of the Mankato Mills Company, Mankato, Minn., to become one of the incorporators of the Midland Knit Goods Company. He will act as vice-president, C. F. Ford, president, and Harris Volk, secretary and treasurer, capital stock, $15,000.

Horace G. Holt, for a number of years wool sorter at the mills at Rockville, Conn., died at his home in that city Saturday, January 19, in his seventy-sixth year.

Geo. W. C. Dowding, overseer of weaving for the Hockanum Company's Mill, Rockville, Conn., has accepted a position as overseer of weaving for the Rhode Island Worsted Company's new mill at Stafford Springs, Conn.

M. Abbott has resigned his position as overseer of weaving at North Hartland, Vt.

James G. Dooley, for several months foreman of the dye house of the Wilton Woolen Mills, has resigned to accept a position in a Massachusetts mill.

Edmond Buckley, overseer of the No. 2 weaving department of the Waumpanoag Mills, Fall River, Mass., has severed his connection with that company. At the close of the working hour, he was summoned to a corner of the room, where in the presence of his employes, he was presented with a solid gold watch of a beautiful pattern. In the evening, the guests assembled at Mr. Buckley's home, where piano solos were rendered by Mrs. Buckley and James Finn.

President L. L. Lampton of the Magnolia Cotton Mills, Magnolia, Miss., has appointed Harry Moore of Wesson, Miss., to the position as superintendent, succeeding E. A. Hall, who resigned. Mr. Hall has accepted a position as superintendent and general manager of the mill at Itasca, Texas.

Edward Ellingsworth, formerly employed at West Buxton, Me., has accepted a position at the Robinson's Woolen Mill, South Windham, Me.

Jos. Berger has accepted a position as overseer of finishing for the Avalon Knitwear Company, Utica, N. Y.

Victor Bartlett has accepted the position as overseer of finishing for the Beacon Mfg. Company, New Bedford, Mass.

R. G. Henderson, superintendent of the Talcott Bros.' Mill at Talcottville, Conn., has closed his services with this company to take up the management and superintendency of the Seneca Woolen Mills, Seneca Falls, N. Y. His successor has not as yet been appointed.

Geo. Garlick of Fall River, Mass., has accepted a position as boss carder at the Hebron Mfg. Company, Hebronville, Mass.

Wilferd Casey has severed his connection with the Slatersville Bleachery and accepted a position in the dye house of the Forestdale Mfg. Company.

Alfred Goodwin has accepted a position with the Jenckes Spinning Company, Pawtucket, R. I. He was formerly employed at the Atlantic Mills, Olneyville, R. I.

C. B. Bennett, night superintendent of the Perry Knitting Company of Perry, N. Y., was presented with a handsome rocker by the help as a token of esteem in which he is held by the help at this mill, as a Christmas present.

Eugene Guthier, overseer of the winding room in the Chace Mills, Webster, Mass., was presented with a gold watch by the help employed in his department. Miss Victoria Coran made the presentation speech.

Geo. Eagan, overseer of finishing at the Moosup Mills, American Woolen Company, Moosup, Conn., was pleasantly surprised by the employers presenting him with a beautiful gold watch as a Christmas present.

James Eagan, who has been card grinder at the Samoset Company, Valley Falls, R. I., has accepted a position as card grinder for the Slater Mills, Pawtucket, R. I.

Miss Louise Maloney, overseer of the burling room of the Coronet Worsted Company, Mapleville, R. I., was presented with a sterling silver toilet set as a Christmas gift, given by the help in her employ. She has been overseer of the burling room for the past four years and is held in high esteem by the operators and the company.

Geo. Murray, overseer of the card room for the Coronet Worsted Mills, Mapleville, R. I., was given a surprise recently on meeting his brother whom he had not seen for twenty-seven years, who is located at Winnipeg, Manitoba.

Elijah Whitworth, overseer in the Franklin

Mills Corporation at Unionville, Franklin, Mass., was pleasantly surprised by the help employed in the weave room. He was presented with a handsome ash tray and a box of cigars.

Wm. Frantz, overseer at the Thomas Kent Mfg. Company's Mill at Clifton Heights, Pa., was presented with a gold watch chain and charm by the employes in this mill.

C. A. Paterson of Bridgeport, Conn., has accepted the position as loom fixer at the Meriden Woolen Company, Meriden, Conn.

Jos. Brown has completed thirty-two years' service as twister in the Talbot Mills, North Billerica, Mass. He has been employed since 1874 for this same company.

E. A. Fairbanks, second hand in the dressing department of the Salmon Falls Mfg. Company, Salmon Falls, N. H., has resigned.

Wm. H. Kelly has accepted the position with the Newburg Steam Cotton Mills, Newburg, N. Y., as roller coverer.

Alex Friedlander of Morris Friedlander Knitting Company, returned from the East, reports business fair.

Deaths.

Henry S. Fenner, for many years treasurer of the Slade Mills, Fall River, Mass., died of paralysis of the brain at his home, January 1, in his 60th year. He had been an invalid since 1903. He was educated at Lapham & Brown University. After several years' service with different mills, he came to Fall River as superintendent of the Slade Mills, where he held the position as treasurer until he was obliged to give up his duties at the mill. He was formerly a member of the common council, a director of the Fall River National Bank, and one of the trustees of the Home for Aged People. He leaves a wife and four children, the eldest of whom is Henry E. Fenner of the editorial staff of the Evening Call.

John T. Bailey, senior member of the firm of John T. Bailey & Co., Cordage Mfg. Company, died at his home in Philadelphia, Pa., January 6 of a complication of heart and kidney disease. Mr. Bailey was born near Dublin in 1830 and came to this country in 1851 and in 1857 he began his business career. He was a charter member of a Massachusetts club, Art and Columbia Clubs. He married Miss Eliza Carey and celebrated their golden wedding in 1902. Four children and his wife survive him.

Samuel Slater, for seventeen years night watchman at the Glenlyon Dye Works of the Saylesville Bleachery, was shot and killed January 8th by two burglars who surprised him while making his rounds in the finishing room of the establishment. He was making his usual rounds and on entering the finishing room saw two strangers prowling among some of the goods. He at once demanded their business, but received no satisfactory reply. Ordering them to accompany him to another part of the building, where two more employes were stationed, but he received no answer and one of the burglars drew a revolver and fired, the bullet striking Slater in the stomach. The guide, hearing the sound of a pistol shot, called William Colburn, another employe of the mill, and the two rushed to his assistance and they found the watchman dying on the floor. He had just strength enough to gasp that he had been shot by two burglars. The police of Saylesville were at once notified of the crime. This is the second time within a few weeks that the dye house has been entered by burglars.

Andrew F. Drumm, overseer of weaving for J. E. Cochrane Mfg. Company, a carpet plant at East Dedham, Mass., died at his home in that town, aged 45 years.

Jos. Hart, for the past thirty-five years superintendent of the Clark Thread Company's Mill at Newark, N. J., died at his home in that city, aged sixty-two years. He is survived by a wife and three sons.

Lenuel Perry, one of the oldest yarn manufacturers in Worcester County, died at his home in Webster, Mass., after a brief illness from pneumonia. He leaves a daughter, Mrs. Henry E. Smith, whose husband will continue to manage Mr. Perry's interest.

Clark Shove, a cotton manufacturer of Fall River, Mass., died at his home in that city at the age of eighty-five years. He was an owner in the Fall River Iron Works Mill. He was the brother of the late Chas. O. Shove, the well known cotton manufacturer. He leaves a wife and one daughter.

Geo. F. Fabyan, of the commission house of Bliss, Fabyan & Co., died at his Brookline home January 18, after several months' illness. He was born in Gorham, Me., in 1837, came to Boston at the age of fourteen in search of employment, which he secured with the late Geo. Chipman. Later he entered the employ of J. M. Beebe & Co., then the largest dry goods selling house in the United States. He was for a time Boston representative of A. T. Stewart. Later he entered into business on his own account in the firm of Wright, Bliss & Fabyan, which was later succeeded by Bliss, Fabyan & Co. The senior partner is Mr. Cornelius M. Bliss of New York. Mr. Fabyan was treasurer and director of the Otis Co., Ware, Mass.; the Androscoggin Mills at Lewiston, Me., and the Columbian Mfg. Co. He was a director in the Old Colony Trust Co., Pepperell Mills, Lewiston Bleachery, Cordis Mills, the Thorndike Co., and other manufacturing concerns. He leaves five children, Geo. Fabyan, the eldest, being manager of the Chicago house; F. Wright Fabyan, associated with the Boston firm; Dr. Marshall Fabyan, professor at Johns Hopkins University, and two daughters. The funeral on the 21st at Trinity Church was attended by representatives of all the dry goods houses in Boston, and many from New York, and during the hour of the service the commission houses were closed.

Willard H. Faunce of Rockland, Me., a well known manufacturer of woolen goods, died at the home of his sister, Mrs. A. Coburn, in Beachmont. He was on a visit from his home in Maine and had spent the holidays with his brother and sister, when he was taken ill with the grip.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

Cotton Facts; A. B. Shepperson, New York City. Price $1.00.

We have received a copy of the new edition of Cotton Facts, which in addition to the usual information given in previous editions has a map showing the territory infested by the Mexican boll weevil.

Self Propelled Vehicles; by Prof. J. E. Homans, A. M., Theo. Audel & Co., New York.

The fifth edition of this work has recently been issued and is designed to meet the requirements of the motor vehicle owner, operator and repairer. The author has endeavored to make the work thoroughly practical and the discussion of theory has been introduced only where absolutely necessary. Much space is devoted to the gasoline vehicle, with a valuable chapter on gasoline engine management. All the parts of the automobile are explained and illustrated.

Directory of the Italian Textile Industry (Annuario delle Industrie Tessili Italiane); L'Industria Tessile e Tintoria, Milan, Italy; 152 pages. Price $1.50.

Probably no country of Europe has had a greater proportion of increase in its textile industry than Italy in the last twenty years. Progress has been made chiefly in the cotton industry. As a result this directory of the Italian textile industry covering cotton, wool and silk form an imposing volume. The textile firms are classified by districts and the branch of the industry whether cotton, wool or silk, is indicated in such a way as to enable ready reference to be made. As an appendix there is a very valuable glossary of textile terms in five languages, Italian, Spanish, German, French, English.

Handbook for the Color Industry (Handbuch der Farben-Fabrikation); by Georg Zerr and Dr. R. Rubencamp; 850 pages, 9 1/2 by 6; Steinkopff & Springer, Dresden, Germany. Price, $10.00.

The last and concluding instalments of this work have just come from the press and are fully up to the high standard of the preceding parts. The completed work forms a very valuable reference book for the color manufacturer and is an important addition to the literature of the color industry. The text is in German.

Power Weaving Practice (Die Praxis der mechanischen Weberei); by Ludwig Utz; 324 pages, 6 1/2 by 9 1/2; Uhlands technischer Verlag, Leipzig, Germany. Price $2.50.

This work includes a description of the latest inventions in weaving machinery. It is divided into the following sections: Looms for cotton and half wool goods; production of fancy cotton, linen, wool and silk fabrics; weaving of kerseys, plush, velvet and carpets; weaving of linen, jute, and narrow fabrics; plans for cotton, silk, worsted, linen and carpet mills. The work contains numerous illustrations and the text is in German.

The Paisley Thread Industry; by Matthew Blair, author of "The Paisley Shawl;" 206 pages, 7 by 10, illustrated; Alexander Gardner, Paisley, Scotland. Price $2.25.

The peculiar charm of Mr. Blair's book, "The Paisley Shawl," is possessed by this its companion piece. The author keeps on good terms with the reader from start to finish. As we read the lines we feel that the author is talking to us, telling of the rise of a great industry, with which he is familiar. There is a certain human interest pervading the story. We are with the pioneers who founded the first unassuming mills. We live with the operatives, and are among their quaint old fashioned surroundings of years ago.

The many excellent illustrations bring before us the scenes of the past, the streets of the old town, the mills and the homes of the people, and the extension of a great industry to foreign lands. The story is told in a most charming way and is placed before the reader in a very artistic volume, well printed and well bound.

The book will interest the general reader as well as the textile worker, and particularly the large number scattered throughout America to whom Scotland will always be home. The subject is treated under the following heads:

The Bargarran Linen Thread, Change to Cotton and Causes of Expansion, The Clark Firm, The Coats Firm, Other Thread Manufacturers, Combination, Present Position of the Industry, Management, Benefactions, Old Paisley, Transition, New Paisley.

A Theoretical Study of Ring Spinning Frames (Traite Theorique des Metiers Continus); by Paul Burkhard; 167 pages; Alfred Roubaix, France. Price $1.75.

As the title indicates, this volume is a study of the theory of ring spinning. No attempt has been made to deal with what is called the practical side of the question, although theory and practice are so intimately connected that no sharp line of separation can be drawn. The author, although dealing with theory, possesses practical experience, being the representative at Roubaix of the well-known textile machine builder, J. G. Gruen, Gebweiler, Germany.

The book opens with a description of the ring frame, after which are chapters on the following subjects: Formation of the bobbin; twist; causes of variation in tension on the thread; movement of the traveler; theoretical study of the variation in tension caused by variation in the direction of the yarn; theoretical study of ballooning; factors in the regulation of the tension.

The second part of the book is devoted to a study of the improvements in the ring frame and is divided into the following subjects: Devices for regulating tension and winding; devices relating to the variation of tension; frames with revolving rings; the Klein ring frame.

A study of theory is of great value to the practical man, helping him to avoid the errors resulting from a reliance on rule-of-thumb methods. For that reason this volume will prove of value not only to the machine constructor and student, but also to the practical mill man. The text is in French.

Business Literature.

Automobile Lubrication; Adam Cook's Sons, New York City.

A booklet calling attention to the merits of Albany grease for the lubrication of automobiles.

Personal Experiences of Students; International Correspondence School, Scranton, Pa. Textile Department, New Bedford, Mass.

This booklet of 207 pages contains a large numbre of reports from I. C. S. students in different parts of the world in regard to the benefit derived from the instruction obtained by correspondence with this school.

Labor Saving Looms, 2d Edition; Draper Co., Hopedale, Mass.

This booklet contains an account of the Northrop loom, its history and gradual development, together with much interesting information regarding the method of operating the loom and the advantages resulting from its use.

Calendars for 1907.

Saco and Pettee Machine Shops, Newton Upper Falls, Mass.

A desk pad, 4 by 8 inches, with each week's calendar on a sheet and with blank margins for memoranda, the whole forming a very useful accessory for a business man's desk.

The Mason Machine Works, builders of cotton mill machinery, Taunton, Mass., have issued a most unusual and artistic calendar, consisting of 12 sheets handsomely printed in crimson and gold, the sheet for each month showing one of the many different machines which they build.

The Wisconsin Mfg. Co., Two Rivers, Wis., are sending out a unique calendar in the form of a miniature hosiery board, finely finished, and bearing their imprint, as well as a calendar. It will attract attention and be a constant reminder of the nature of their business.

Draper Company, Hopedale, Mass., builders of improved cotton machinery, are sending out a calendar which bears a cut of an old-fashioned kitchen, with its braided rug, loom, and flax wheel, a very realistic illustration of days gone by.

The Shaw Stocking Company, Lowell, Mass., have a very neat calendar which advertises the "Shawknit" hosiery in a particularly attractive way and incidentally calls attention to the coming of another year.

The Wisconsin Manufacturing Co., Two Rivers, Wis., are about to move into a large new building, giving them about ten times the capacity they had before. They make drying forms for hosiery, mittens, gloves and underwear, as well as spools for textile purposes.

Casualty Insurance.

In his annual letter to the agency forces President Stone of the Maryland Casualty Company gives an account of the condition of the company's business, the progress made during the last year and the prospects for the future. The following extracts are from his address:

"It is gratifying to state that in the general growth of the volume of casualty business in 1906 our company had a fair share. The total increase in our premiums written, over those of the year 1905, was $369,336.69. While the greater part of this came from the United States, we acknowledge with sincere appreciation an increase of $30,478.32 in our Canadian business, and of $1,914.77 in our Mexican business.

"The Maryland is now recognized as one of the leaders in the Dominion of Canada, for which we take pleasure in expressing our thanks to our splendid corps of representatives in that rapidly developing country.

"When we turn from the general subject of casualty insurance to its separate branches, the liability department takes the first place, by reason of its premium volume. The Conference of Liability Companies has increased its membership during the year and now includes six companies. It has definitely ceased to be in any sense an arbiter and is limited in its scope to actuarial and statistical work. Such work is, and always will be, well worth its cost in any class of insurance, but is peculiarly worth while in the field of liability insurance, notwithstanding the fact that the factors in the problem of liability rate-making are undergoing constant change. The increased cost of living and the consequent increase of wages, the steady growth of labor-saving machinery, with its consequent increase of hazard to operatives and decrease of their number and total pay roll, the elaboration of the trades-union system of cooperation with a certain type of attorneys in the handling of personal injury claims and suits, the gradual removal by legislation of the legal defences of 'fellow-servant,' 'hazard incident to the business,' 'assumed risk,' and 'contributory negligence,' and the unmistakable disposition of juries to decide personal injury cases from the standpoint of sympathy for the claimant rather than of simple justice in the light of the law and the facts, are, all of them, elements that are constantly working toward and actually producing greater cost per one hundred dollars of pay roll in furnishing liability insurance.

"Probably the most noteworthy incident in the year's history of liability insurance was the introduction by the Maryland of the 'Perfect Form' of liability policy. The practically unanimous opinion of those who have expressed themselves regarding it (and nearly every insurance publication of any prominence has done so), is that it is easily the most advantageous policy to the assured that has ever been offered. The opinion has been equally general that no company can afford to sell such a policy except at a large advance over the going rates for what is conveniently known as the standard form. We realized very clearly when we devised, copyrighted, and published the perfect form that the absolutely complete protection that

it gives the policy holder cannot be furnished unless the premiums be correspondingly larger than those charged for the standard form—and we are getting just that advance over the current rates. The sale of this most desirable policy has not been startlingly great, but it has been such as to prove the demand for such a contract. Perhaps if the Maryland had not such a good reputation for taking care of its patrons under the standard form there would be larger sale for the new one. Of one thing our friends are justly confident; that is, that they will get a full equivalent for their money, whatever form of protection they purchase from the Maryland.

"The liability business of the company for 1906 was, all things considered, as satisfactory as could reasonably be expected. The volume of premiums increased $207,679.67 over 1905. Of this increase, $184,531.48 was in initial premiums and $23,148.19 in additional premiums on pay roll adjustments. The process of applying personal experience and training, tabulated experience in the form of statistical records of the Conference and of the company on classes of risks and on localities, and specific experience on individual risks, in the effort to make our underwriting practice scientific and safe, continues to call forth a high degree of care and judgment on the part of all those who have this important and difficult part of the company's interests in charge. It is well that we have good reason to depend with confidence upon just that kind of service in the liability department."

Cotton Wool.

A meeting was held at the Bradford Chamber of Commerce, on Monday, attended by members of that Chamber and representatives from the heavy woolen district, Keighley, and other neighboring Chambers of Commerce, to hear addresses on the objects and work of the British Cotton Growing Association by Sir W. H. Holland, M. P., and Mr. J. A. Hutton, of Manchester.

Sir William Holland, in the course of his address, remarked that the difference between the wool and the cotton supply was that almost all our wool came from our own colonies, while three-quarters of our raw cotton came from America. How far cotton was used instead of wool was rather a delicate matter to deal with, but many woolen manufacturers in Bradford and district were using more cotton than they would like to disclose.—(Laughter.)

Mr. J. A. Hutton said that Australia was in one respect, perhaps, similar to Bradford. The association recently offered 6d. a pound for some cotton grown in Australia, but found that it had been sold out there for 7d., and further inquiry disclosed the fact that it had been used for the woolen garments produced there.—(Laughter.)

Colonel Herbert A. Foster, in proposing a vote of thanks to Sir William Holland and Mr. Hutton, gave some interesting figures concerning the use of cotton in woolen goods. He said that the proportion of cotton in the woolen piece by weight varied from 25 to 30 per cent.—Cotton Factory Times.

The Yale & Towne Works.

Mr. H. J. Lamborn has been appointed superintendent of power and plant in the Yale & Towne Works, to succeed Mr. F. A. Waldron, who resigned about a year ago. The position is a very responsible one involving, as it does, the management of the entire steam and electrical plant, the supervision (and frequently the designing) of new buildings, and, in general, everything relating to steam and electric power and distribution, heating and ventilating, water supply, drainage, fire protection, up-keep of buildings, and general repairs throughout the whole plant. The work involved thus requires not only executive ability, but also the training of an engineer and broad technical experience.

Mr. Lamborn was born in Philadelphia in 1873, and graduated first from the Philadelphia High School, and later from the Towne Scientific School of the University of Pennsylvania in the course of mechanical engineering. For three years he was associated with Mr. John C. Trautwine, Jr., in editorial work for the "Civil Engineer's Pocket-Book;" then for four years connected with the engineer department of the U. S. A. on harbor and fortification work near Philadelphia, and then for a year with the Hyatt Roller Bearing Company as mechanical engineer. Since 1902 he has held the position of mechanical and electrical engineer and superintendent of the magnetic separating plants of Witherbee, Sherman & Co., at Mineville, N. Y. These separating plants are the largest in the world, their annual production being 400,000 tons of concentrated iron ore. The separating plants and power stations at Mineville were designed and built under the supervision of Mr. Lamborn, including an extensive concrete power station equipped with turbo-generators of the Curtis type.

Mr. S. E. Dauchy, who has been acting superintendent of power and plant during the last year, and for several years has held the position of assistant superintendent, will continue in the latter capacity under Mr. Lamborn.

B. F. Boyer Co.

B. F. Boyer Company, manufacturers of worsted and woolen yarns, have removed to their new building and are now operating a large part of their machinery therein. It is located on River Ave. and Marlton St., Camden, N. J. Visitors to their mill find that the North Cramer Hill trolley car at Market St. Ferry, Camden, takes them direct to the mill. In their new quarters they have more room, which is required for their constantly growing business.

Undergrate and forced draft apparatus is being installed by the B. F. Sturtevant Co. of Boston, Mass., for P. Ballantine & Sons, Newark, N. J.; Atlas Engine Works, Jersey City, N. J.; Haverhill Gaslight Works, Haverhill, Mass.; Lawrence Mfg. Co., Lowell, Mass.; Newton, Langhorne & Bristol St. Ry. Co., Newton, Pa.; and Arlington Mills, Lawrence, Mass.

The Foster Superheater.

The Power Specialty Company, 111 Broadway, New York, in order to handle to better advantage the rapidly increasing demand for the Foster superheater, has within the past year opened branch offices at Boston, Chicago and Philadelphia. On January 1st they established an additional branch office in St. Louis, 1012 Chemical Building.

Following are a few of the many companies placing orders for the Foster superheater within the last few months: Washington, Brooklyn and Charleston Navy Yards; American Locomotive Co.; N. Y., N. H. & H. Ry. Co.; International Harvester Works; Philadelphia & Western R. R.; N. J., Hudson River Ry. & Ferry Co.; Solvay Process Co.; Raritan Copper Co.; Western Steel Car & Foundry Co.; Southern Pacific S. S. Co.; James S. Kirk & Co.

The Washington Navy order is a duplicate of three previous orders, each for 1,500 H. P., Babcock & Wilcox boilers.

The Power Specialty Company has also equipped a large number of internally fired and return tubular boilers, and has built a great many separately fired superheaters.

American Goods in China.

The comparative difference between American and English plain gray shirtings is very noticeable. The former rose from approximately one-tenth of the amount of the latter entering in 1903 and 1904 to more than one-fifth of England's last year's import. The great falling off in sheetings is due to the boycott, the natives substituting their own goods, of which they produce a great quantity, but of an inferior quality. Shirtings, drills, chintzes and cotton prints were little affected, as, possessing no substitute of their own, the Chinese still bought them. No jeans are imported into Nanking from America.

There has been opened up in Nanking recently as many as a dozen new native stores which deal exclusively in foreign piece goods, not only such as the coarser cotton drills, sheetings, etc., but the finer gauzes, lawns, silks, satins, flannels, light and heavy woolen cloths, brocades, muslins, brilliantine, velveteens, ginghams, plain and printed piques, prints, cretonnes, and sateens. This latter has largely supplanted the Nanking black satin trade, the reason being that the Chinese black satin fades, while the foreign sateens look almost equally as well, cost considerably less, and have the superiority of retaining their lustre and color.

Formerly it was the practice in Chinese piece-goods shops to have all pieces carefully and separately wrapped, intending purchasers being compelled to buy by sample and verbal description without seeing the goods. This, until recently, had been the custom for centuries. At present, however, all pieces are displayed on shelves, and buyers are allowed to satisfy themselves both by ocular and tangible proof as to the quality of the goods. —Consular Report from Nanking.

The Acheson Harden Co., Passaic, N. J., have adopted the American Moistening Company's system of humidifiers.

At the Old Stand.

The Tioga Needle Manufacturing Co. have severed their connection with the Lynwood Manufacturing Co., and are now located at their old address, 3541 North Marshall Street, Philadelphia. The Tioga Company are manufacturers of spring needles of all kinds, narrowing transfer points and welt hooks. They possess excellent facilities for manufacturing these products and are in a position to fill orders promptly.

Consulting Engineers.

Goss & Bryce, 75 William St., New York, have conducted a general consulting and mechanical enginering business in New York City for several years. The senior member of the firm after graduating from the Worcester Polytechnic Institute was engaged in general engineering. For several years he conducted a consulting and mechanical engineering business until three years ago the firm of Goss & Bryce was formed. J. Wares Bryce, the junior member of the firm, received a part of his education at the College of the City of New York and was associated with Mr. Goss for some time previous to the formation of the partnership. Mr. Bryce has had an extensive experience in the application of gas and oil for power purposes.

For some time the firm have been acting in the capacity of consulting engineers in cases involving various branches of manufacturing and construction. Their services can be secured for general consulting and mechanical equipment and for the design and layout of power plants or for alterations, extensions and betterments. Neither Mr. Goss. nor Mr. Bryce has any direct or indirect connection with any mechanical or manufacturing business. This firm make power equipment for factories a special feature of their business and any one contemplating the erection of a textile mill will do well to consult them.

Low Wages in China.

Harry L. Paddock, consul at Amoy, transmits the following report on farmers and scale of wages paid in China:

"The farmer is up before daybreak and at work in his sterile fields—fields whose productivity has been exhausted except under high fertilization—and he returns to his little shanty after nightfall. To the view of the foreigner he never rests, and for this never-ending labor he raises a crop of rice or corn that does not support his family for the year. His clothing consists of a loin cloth in summer and a coarse cotton suit in the winter. He is simply an example of all the laborers and artisans of China. All work hard to live and all receive a compensation commensurate with that of the farmer. The following scale of wages will give some idea of the daily returns received for labor done (in United States gold): Laborer, 10 cents; mason, 15 cents; artisan, 10 to 20 cents; and clerk, 40 to 50 cents."

Graduation of Textile School Students.

The following students graduated from the textile department of the International Correspondence Schools, New Bedford, Mass., during the months of November and December, 1906.

Complete Cotton Course: Fred. Fallows, Woonsocket, R. I.

Cotton Carding and Spinning Course: Robert F. Harris, Lowell, N. C.; Arthur Sutcliffe, Lancashire, England; R. H. Inman, Proximity Sta., Greensboro, N. C.

Cotton Spinning and Warp Preparation Course: Ernest Noel, Leominster, Mass.

Complete Textile Designing Course: Napoleon Magnant, Hamilton, R. I.

Woolen Warp Preparation and Weaving Course: Geo. Heidel, California, Mo.; Lester S. Clark, Sangerville, Me.

Woolen and Worsted Designing Course: Fred Plante, Norwich, Conn.

Jenckes Spinning Company Open Philadelphia Office.

The Jenckes Spining Co. of Pawtucket, R. I., have opened an office in Philadelphia in the Mariner & Merchant Building, under the management of Wm. A. Spelisy, formerly connected with Wm. D'Olier & Co. In addition to yarns of their own make they are prepared to furnish Southern yarns of every description.

Steam Fittings.

For the last year or two the Birdsboro Steel Foundry & Machine Co. have been making a specialty of casting O. H. steel pipe fittings suitable for high pressure superheated steam. Their efforts have met with such uniform success, and the work reached such proportions that they have found it necessary to design and build what they call a special tri-facing machine in order to facilitate the handling of this class of work. This machine is capable of boring, facing and truing up a "T" or "L" fitting in one operation without in any way disturbing the original setting of the casting, and increasing the finishing capacity 200 per cent.

Among some of the large orders recently filled are ten complete air and gas register valves for 50 ton O. H.; furnace for the Bethlehem Steel Co.; one eighteen-inch and one twenty-four inch accumulator for the Schoen Steel Wheel Co.; one forty-inch Wagner cold saw for the Pacific Coast; another of the same size for the Watertown arsenal; one twenty-six inch saw for the Inland Steel Co.

In addition they have a number of others booked, ranging in capacity from fourteen inches to forty inches inclusive, and are completing a large order of cast steel car bodies for the Cambria Steel Co., thirty steel body ingot cars for the New York State Steel Co., also several orders of hydraulic machinery for companies in the South.

Ironmoulding of Cloth in the Loom.

When heavily sized grey cloths are being manufactured and the warp is left in the loom overnight, it is often found that the reeds become rusted. This rusting has been attributed to the presence of excessive amounts of magnesium or zinc chloride in the size, but the author considers it to be due to chlorate in the zinc chloride employed. Zinc chloride is prepared chiefly from "zinc ashes," the refuse from galvanizing works, and it contains ammonium chloride, metallic iron, and iron oxide, zinc and zinc oxide. The ashes are dissolved in hydrochloric acid, forming zinc chloride and ferrous chloride. To oxidize the ferrous iron, sodium or potassium chlorate is used, a slight excess being necessary. Most of the commercial zinc chloride solutions contain quantities of chlorate, varying from 0.1 to 0.4 per cent., and these salts easily rust the reeds. Two samples of zinc chloride for sizing purposes had the following composition:—

Zinc chloride	44.63	....	44.94
Zinc oxide	0.38	....	1.49
Ammonium chloride	2.05	....	absent
Sodium sulphate	1.27	....	trace
Sodium chlorate	0.28	....	0.31
Water	51.39	....	53.26
	100.00	....	100.00
Sp. gr. at 15.55° C.	1.5265	....	1.5300
Equal to ° Tw.	105.3	....	106.0

The following table shows the influence of different substances in producing rusting of the reeds. The experiments were continued for 48 hours in solutions made acid to litmus paper with acetic acid. A knitting needle was placed on cloth soaked with the solution and the time taken to produce rusting noticed:—

Pure zinc chloride, did not rust.

Pure magnesium chloride, did not rust.

Pure ammonium chloride (saturated), 4 hours.

Pure sodium chlorate (saturated), 10 minutes.

Zinc chloride containing 1 per cent. sodium chlorate, 10 minutes.

Zinc chloride containing 0.25 per cent. chlorate, 4 hours.

Zinc chloride containing 1 per cent. sodium chlorate but no free acid, did not rust.—Jour. Soc. Chem. Ind.

More Southern Mills Install Schaellibaum Grids.

Among the more recent converts to the use of the Schaellibaum grid in the South are the following mills: Columbus Mfg. Co., Columbus, Ga., who have placed an order for a complete installation; The Georgia Mfg. Co., Columbus, Ga.; Trio Mfg. Co., Forsyth, Ga.; Edenton Cotton Mills, Edenton, N. C.

The Coventry Company, Anthony, R. I., have placed a repeat order for humidifiers with the American Moistening Co., Boston, Mass.

Sizing Warps.

When mixed with Arabol starch, corn starch or potato starch "Sizeoleum," manufactured by the Arabol Mfg. Co., 100 Williams St., New York, makes a most satisfactory sizing for cotton warps, sheetings, domestics and print cloth warps. It is especially recommended for the South, as it has the advantage of resisting the influence of that climate.

Spring Needles as well as Latch.

The Continental Latch Needle Co. of 120-122 Liberty St., New York, report that their business on latch needles is increasing in a most gratifying fashion, and attribute this fact to the uniform excellence of their product. In addition to German latch needles they import from Germany large quantities of spring beard needles for full fashioned hosiery and underwear machines.

James Taylor in Larger Quarters.

James Taylor, a well-known dealer in knitting machines and supplies and who for a long time has been located at 835 Arch St., has moved his offices and warerooms to more commodious quarters at 121 Arch St., Philadelphia. His facilities have been greatly increased and he can promise prompt deliveries. Mr. Taylor is a quick cash buyer of all sorts of knitting machinery and supplies, and owing to the large business that he does is able to make low prices to those wishing to purchase.

Cotton Growing in Jamaica.

In his annual report for 1906 the governor of Jamaica refers as follows to the cultivation of cotton in that colony:

"Vigorous steps were taken to induce cultivators and others to grow cotton. In April, 1904, an expert visited the island and gave practical lessons in cotton growing. Hand gins were supplied by the British Cotton Growing Association, and Paris green, as an insecticide, by the Government. Traveling instructors, employed by the Government, continually impressed on the people the desirability of giving the products extensive cultivation. Messrs. Oliver and Stancliffe were deputed by the British association to visit the island and give advice and assistance. These gentlemen met those supposed to be interested in cotton cultivation, but the result of all these efforts and outlays was rather disappointing, the output of cotton in 1905 being only 14,466 pounds, which was shipped to the United Kingdom, where it realized about $2,500.

"It is well known that after the American war for independence many loyalists left the United States for Jamaica and Belize, where they planted cotton with great success, and it is disappointing to find that, with so much in favor of the cultivation, it has not been pursued with more energy in the colony."

Cheney Bros., So. Manchester, Conn., are increasing their system of humidifiers, using the American Moistening Co.'s system.

Crompton & Knowles Loom Works buy the Crompton-Thayer Co.

The Crompton & Knowles Loom Works of Worcester have purchased the business of the Crompton-Thayer Loom Co. of the same city, and will operate the latter company's plant at its present location on Cambridge St.

Fifty Years Young.

Few knit goods manufacturers in this country have been in business for themselves for fifty years. Wm. Carter, president of the Wm. Carter Co., Highlandville, Mass., has such a record and his fiftieth anniversary of starting business in America was celebrated in Needham Town Hall, January 29. Mr. Carter was one of the first to introduce frame work knitting into this country. With the first money he made he bought a knitting machine, which he set up in a room in his house. That was the modest beginning of the present large business of the Wm. Carter Company. These first machines were operated by hand and foot power. A little later Mr. Carter hired a few skilled knitters to help him and putting his samples in a bag made the rounds of the jobbing houses in the eastern part of the country selling the product. Beginning originally with the manufacture of cardigan jackets, the business has grown until it now embraces mittens, men's, women's, and children's underwear, and lately a specialty has been made of union or one-piece garments.

The Wm. Carter Company has lately been making a successful appeal to the consumer by advertising in magazines of general circulation, and thus extending a knowledge of the merits of their output directly to the wearer.

Perpetual Calendar.

The Nicetown Mfg. Co., Philadelphia, Pa., manufacturers of mill and laundry soaps, cotton softeners, soap powder, etc., have issued this year an attractive novelty in the way of a calendar in that it does not outlive its usefulness at the end of the current year, but is perpetually useful by a simple adjustment of the cards at the beginning of each month. The calendar frame is substantial as well as attractive, the face being made of "crystaloid."

We understand they have a few of these calendars on hand which will be sent to users of textile mill soaps as long as they last.

O. J. Ahlstrom, importer of foreign special and sewing machines, has removed to 711 Broadway, New York.

The Standard Paint Co., Ltd., of Canada, celebrated the occasion of the opening of their factory by a banquet to their friends and customers at the Canada Club on January 18, which was largely attended and very much enjoyed by the guests.

Anthrax.

A report issued by the Anthrax Investigating Board, Bradford, Eng., gives an account of the work done during the past year to combat this dangerous disease. One experiment showed that at a temperature of 300° F. (dry heat) it required three hours to kill anthrax spores. The anthrax bacillus was killed in a bath at 160° F. after immersion for 15 or 20 minutes, but the spores remained unaffected, and and there was, therefore, no practical change in the dangerous character of the work. A temperature of 160° F. would, of course, injure the fibre very considerably. None of the disinfectants tested thus far, the Board report, can be regarded as satisfactory under all conditions.

"Particulars in possession of the board show," the report adds, "that at some commission combing works there have been many more cases of anthrax than at other commission works where similar materials are dealt with, while some commission combers have hitherto been practically free from cases of anthrax. This would seem to suggest that careful inquiry ought to be made as to the various methods employed in handling and dealing with the scheduled materials previous to washing. At present, for want of accurate information which the Board is engaged in collecting, no cause for the proportionately greater number of cases of anthrax among commission combers can be definitey assigned, but the records thus far tabulated certainly point to a greater liability to anthrax among workpeople employed at these works in combing scheduled materials than among those employed in sorting them and in combing them at other places.

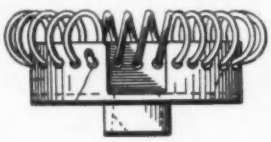
"It becomes a question for grave consideration whether some effort cannot be made to obtain greater security from anthrax in this special business. The board are inclined to think that it might be possible to make a list of the special cases of scheduled materials usually treated by the commission combers and most open to suspicion as likely to contain anthrax germs, and only to allow these 'sorts' to be combed by them under a special permit from the Home Office, under the special supervision of His Majesty's inspectors, and at the recommendation of this Board. If such materials could be classified and the most suspicious sorts further marked out, and no commission comber be allowed to comb them except under a special permit or licence, it would be practicable for His Majesty's inspectors to ensure the observance of precautions that it would be unnecessary to apply either to the whole trade or to all the materials the commission comber might work. The comber, on the other hand, would be enabled to ensure an adequate remuneration for the extra cost entailed and be encouraged to provide special plant for these materials.

"It is difficult to account for the comparatively large increase in the number of cases in the wool industry during the year 1905, but it is possible that this may have been due to an epidemic of anthrax among animals in the districts where the infected material was grown. It is also possible that the increase of cases may be due to some extent to the large amount of false packing that has recently taken place in some kinds of imported materials. It is proposed to make further representations to the countries concerned to the effect that unless more care is taken in the classing and packing very stringent regulations will have to be applied to the whole of the wool and hair imported from such countries. This will increase the cost of working, and will place such materials in a disadvantageous position as against similar materials imported from other countries."—Manchester Guardian.

Recent Textile Patents.

BOBBIN HOLDER for Spinning Spindles. 839,460. Patrick J. Duggan, and Joseph J. McCarthy, Providence, R. I.

This invention relates to a bobbin-holder adapted to be secured upon the spindle of spinning-frames;



and its object is to provide means to hold a bobbin by frictional contact when positioned upon the spindle.

CARDING MACHINE CLEANER. 840,476. Romaine Couture, Somersworth, N. H.

CLOTH BOARD and Sample Holder. 839,694. John H. Ackroyd, New York, N. Y.

This invention comprises a new means for supplying a bolt of cloth with an apparatus for receiving and retaining in the interior of the bolt a separate strip of the same cloth, and for permitting one end of that strip to be withdrawn from the bolt just far enough to bring into view a sufficient

area of the strip to be cut off and given away as a sample, and for permitting this operation of withdrawal and cutting off to be repeated until the entire strip of cloth has been disposed of.

CLOTH CUTTING MACHINE. 840,767. John B. Gury, St. Louis, Mo.

CLOTH CUTTING MACHINE. 841,325. William H. King, Newark, N. J., assignor to Simplex Cutting Machine Co.

COTTON GIN ATTACHMENT. 842,101. George W. Long, Lindsay, Ind. Ter.

COTTON. Ginning. 841,385. John R. Fordyce, Little Rock, Ark.

DYEING TEXTILE FABRICS. 842,122. Ernst Spatz, Hackensack, N. J., assignor to United Piece Dye Works, Lodi, N. J.

DYEING TEXTILE FIBRE Violet Blue. 840,419. Oscar Bally, Mannheim, Germany, assignor to Badische Anilin & Soda Fabrik, Ludwigs-hafen-on-the-Rhine, Germany.

EMBROIDERING MACHINE SHUTTLES. Apparatus for Filling. 839,449. Ernst Berger, Rorschach, Switzerland, assignor to Henri Levy, Rorschach, Switzerland.

FABRIC CONTAINING HAIRCLOTH. Making. 840,841. Gustav Goldman, Baltimore, Md.

LOOM. 841,087. William Hannah, Paterson, N. J.

LOOM FILLING Detecting Mechanism. 842,117. Charles F. Roper, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM FILLING Detecting Mechanism. 840,377. Charles F. Roper, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOMS. Harness-Controlled Stop Motion for. 840,958. Victor Rainville, Nashua, N. H., assignor to Draper Co., Hopedale, Mass.

LOOM Needle. 839,315. William Pearsall, Worcester, Mass., assignor to Matthew J. Whittall, Worcester, Mass.

LOOM. Pile Fabric. 840,257. Hovcep Sarafian, Yonkers, N. Y., assignor to United States Persian Carpet Company, New York, N. Y.

LOOM PILE FABRIC. 840,275. Fred A. Whitmore, Philadelphia, Pa., assignor to Nazar Costikyan, New York, N. Y.

LOOM SHUTTLE. 842,133. John C. Brooks, Paterson, N. J., assignor to Draper Co., Hopedale, Mass.

LOOM SHUTTLE CHECK. 841,863. Warren B. Harris, Millbury, Mass.

LOOM. Warp Stop Motion. 840,196. Josef Bim, Vienna, Austria.

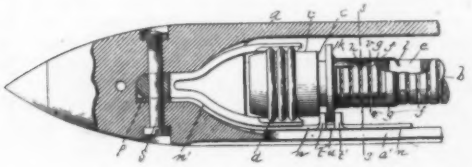
LOOM FOR WEAVING Cross Woven Fabrics. 839,435. Hermann Staubli, Horgen, Switzerland.

LOOMS. Device for Automatically Stopping. 840,034. Carl Adams, Easton, Pa.

LOOMS. Mechanism for Changing Shuttles in. 841,492. Ernest J. Entwisle, Barnsley, Eng.

MEASURE FOR FABRICS. 840,047. George W. Davis, Baltimore, Md.

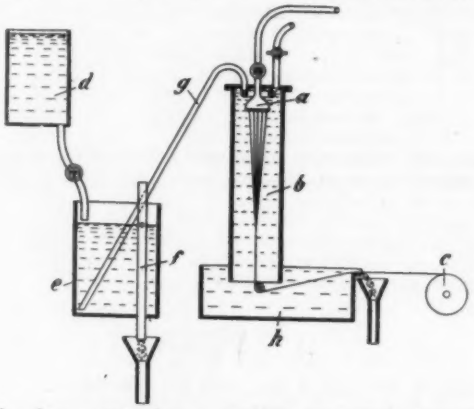
SHUTTLE FOR COTTON LOOMS. 838,629. Joseph E. Lemyre, Manchester, N. H.



In this invention is provided a non-conical sleeve or tube of substantially even diameter internally throughout its length, with the exception of certain annular internal ribs adapted to fit in the grooves in the spindle. This sleeve is provided at the end next the head with an annular flange which normally holds off the spring which receives the blows of the feeler and when but little thread is left on the spindle allows said spring to drop on opposite sides of the flange, thus locking the sleeve and preventing it from longitudinal movement, but not swinging it out of parallelism with the spindle, as is the case when a spring strikes a conical feeler-stop.

SILK. Apparatus for the Manufacture of. 838,758. Edmund Thiele, Brussels, Belgium.

The apparatus is of the type in which the production of artificial silk is effected in a spinning vessel which resembles a barometer, being closed at the top and open at the bottom. In order to obtain in the spinning vessel traversed by the precipitation liquid a steadily uniform vacuum, adjustable without interruption or disturbance of the continuity of spinning, the liquid is allowed, according to the present invention, to flow through a lower-level auxiliary reservoir, the surface level of which can be kept constant in any known manner—for instance, by an overflow-pipe. From the arrangement of the auxiliary reservoir at a lower level it results that the vacuum in the spinning vessel, in spite of the juxtaposition of an open auxiliary reservoir, which is in communication with



the free atmosphere, remains preserved, because the fluid column in the spinning vessel does not receive, as in a higher-situated auxiliary reservoir, the pressure of the precipitation fluid standing in the latter, but, on the other hand, must suck up the precipitation liquid out of the auxiliary reservoir.

SILK AND OTHER Silk Goods. Manufacture of Artificial. 842,125. Henri E. A. Vittenet, Ville-france-sur-Saone, France.

SILK. Weighting. 840,264. Charles Simon, Paterson, N. J.

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SPINNING FRAME Roll Stand. 840,779. Edward D. Libbey, Westbrook, Me.

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WINDING FABRICS, Yarns or Threads. Automatic Regulator for Use in. 839,261. Francois Beraud, Lyon, and Henri Janton, Villeurbanne, France.

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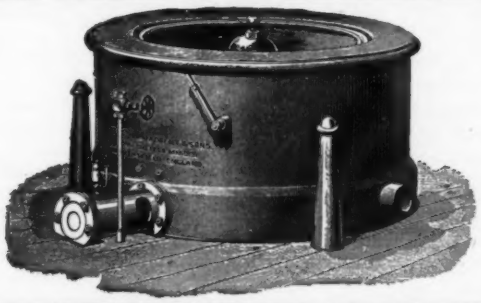

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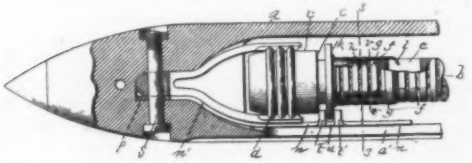

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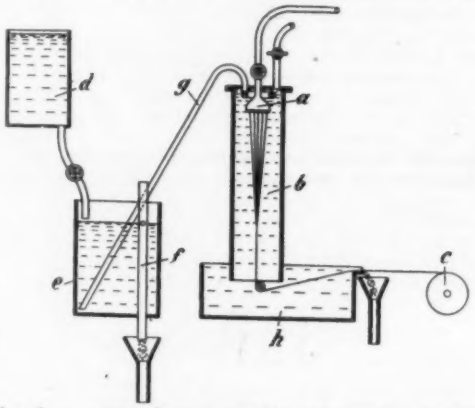

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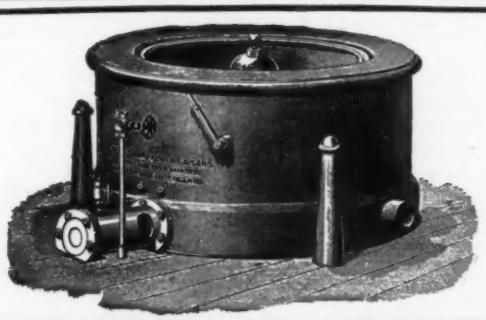

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☞ Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

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American Moistening Co.
Bell Pure Air & Cooling Co.

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Ferguson, John W.
Main, Chas. T.

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Johns-Manville Co., H. W.

Asphalt Floors.
Simpson Bros. Corporation.

Asphalt Tanks.
Scaife, W. B., & Sons.

Automatic Feeds for Cotton and Wool.
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Harwood, Geo. S., & Son.
Kitson Machine Co.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schofield, Wm., Co.
Woonsocket Machine & Press Co.

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Barber-Colman Company.

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DeHaven Manufacturing Co.

Balling Machine.
Diamond Textile Machine Works.
Torrance Mfg. Co.

Bandings.
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Johns-Manville Co., H. W.

Boiler Compound.
Johns-Manville Co., H. W.

Boiler Inspection and Insurance.
——See Steam Boiler Insurance.

Boilers.
——See Steam Boilers.

Boxes, Cloth Boards, Etc.
Pearson, J. T.

Box Shook.
Connecticut Box Company.

Braiding Machinery.
New England Butt Co.
Textile Machine Works.

Braids.
——See Tapes, Braids and Edgings.

Bridges.
Scaife, W. B.., & Sons.

Brushers.
——See Napping Machines.

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Mason Brush Works.
Parks & Woolson Machine Co.

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Curtis & Marble Machine Co.
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Birch Bros., Somerville Machine Wks.
Butterworth, H. W., & Sons Co.
Rice, Barton & Fales Co.
Taunton, New Bedford, Copper Co.
Textile Finishing Mchy. Co.
——See also Dyeing, Bleaching, Machinery, etc.

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Morris & Co.

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Carbonizing Machinery.
American Drying Machinery Co.
Birch Bros., Somerville Machine Wks.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.

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Bowes, L. M., Co.
Leigh, Evan A.
Riley, C. E., Company.
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Blaisdell, S., Jr., Company.
Indian Orchard Company.
Wonalancet Company.

Card Feeds
——See Automatic Feeds.

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Stoddard, Haserick, Richards & Co.

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Brown, Wm. H., Co.

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Roessler & Hasslacher Chemical Co.
Solvay Process Co.

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Little, Arthur D.

Cling Surface.
Cling Surface Mfg. Co.

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Pettes & Randall Co.

Cloth Boards.
Chaffee Bros.
Pearson, J. T.
Smythe, J. L. N. Paper Co.

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——See Cutting Machinery.

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Leyland, Thomas, & Co.
Textile Finishing Machinery Co.

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American Tool & Machine Co.
Hunter, James, Machine Co.

Color Kettles.
Rice, Barton & Fales Machine & Iron Company.

Combs (Wool and Cotton).
Hood, R. H.
Leigh, Evan A.
Lowe, Stephen C.
Philadelphia Textile Machinery Co.
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Simpson Bros. Corporation.

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Puffer, William L.

Conveyors, Pneumatic.
——See Blowers & Blower Systems.

Cop Spindles.
American Textile Specialty Mchy. Co.

Cop Tubes.
American Textile Specialty Mchy. Co.
——See Paper Tubes.

Copper Print Rollers.
Rice, Barton & Fales Machine & Iron Company.
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Charles, W. B.
Riley, C. E., Company.
Stoddard, Haserick, Richards Co.
Tolar & Hart.
Wonalancet Company.

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Cotton Machinery.
Altemus, Jacob K.
American Textile Appliances Co.
American Textile Specialty Mchy. Co.
American Drying Machinery Co.
Ashworth Bros.
Barker, James.
Butterworth, H. W., & Sons Co.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Diamond Textile Machine Works.
Draper Company.
Easton-Burnham Co.
Elliott & Hall.
Entwistle, T. C., Co.
Firth, William, Co.
Hetherington, John, & Sons, Ltd.
Howard & Bullough American Mach. Co.
Kilburn, Lincoln & Co.
Kip-Armstrong Co.
Kitson Machine Co.
Leigh, Evan A.
Lowe, S. C.
Lowell Machine Shop.
Mason Machine Works.
Metallic Drawing Roll Co., The.
Parks & Woolson Machine Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Providence Machine Co.
Rice, Barton & Fales Co.
Riley, C. E., Company.
Saco & Pettee Machine Shops.
Schofield, Geo. L.
Smith & Furbush Machine Co.
Stafford, G. W., Mfg. Co.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Whitin Machine Works.
Woonsocket Machine & Press Co.

Cotton Openers and Lappers.
Howard & Bullough American Mach. Co.
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

Cotton Softeners.
Bosson & Lane.
Nicetown Mfg. Co.
Zurn, O. F., Co.

Cotton Waste.
Blaisdell, S., Jr., Co.
Charles, W. B.

Cranes.
Yale & Towne Mfg. Co.

Crayons.
Dixon, Jos., Crucible Co.
Lowell Crayon Co.

Cutter for Knit Goods.
Langston, Samuel M.

Cutting Machinery.
Eastman Machine Co.

Dextrine.
Stein, Hirsh & Co.

Dobbies.
Crompton & Knowles Loom Works.
Stafford, G. W., Mfg. Co.

Drawing Rolls.
Hood, R. H.
Metallic Drawing Roll Co., The.

Dryers.
American Blower Co.
American Drying Machinery Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Boston Blower Co.
Buffalo Forge Co.
Butterworth, H. W., & Sons Co.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.
Mass. Fan Co.
Philadelphia Drying Machinery Co.
Sargent's, C. G., Sons.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.
Vacuum Process Co.

Drying Boards.
Bull, William C.
Pearson, J. T.

Dusters.
——See Wool and Waste Dusters.

Dust Collectors.
Knickerbocker Co., The.
Philadelphia Drying Machinery Co.
Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.

Dyers, Bleachers and Finishers.
Brophy's, T., Sons.
Davidson, J. F.
Fairhill Bleachery.
Firth & Foster Co.
Greenwood, R., & Bault.
Home Bleach & Dye Works.
Ingrahamville Dye Works.
Lorimer's, The Wm. H. & Sons Co.
Pawtucket Dyeing & Bleaching Co.
Peerless Co.
Providence Mills Mfg. Co.
Rowland, Samuel.

Dyeing, Drying, Bleaching and Finishing Machinery.
Aiton Machine Co.
Allen, William, Sons Co.
American Blower Co.
American Drying Machinery Co.
American Dyeing Machine Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Butterworth, H. W., & Sons Co.
Cornell Stocking Corporation.
Curtis & Marble Machine Co.
Entwistle, T. C., Co.
Gessner, David.
Heathcote, John, & Son.
Hopkins Machine Works.
Hunt, Rodney, Machine Company.
Hunter, James, Machine Co.
Kenyon, D. R., & Son.
Klauder-Weldon Dyeing Machine Co.
Klipstein, A., & Co.
Leigh, Evan A.
Leyland, Thos., & Co.
Parks & Woolson Machine Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Rice, Barton & Fales Co.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Sirocco Engineering Co.
Sturtevant, B. F., Co. (Drying).
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Vacuum Process Co.
Whiteley, William, & Sons, Ltd.

Dye House Cans.
Hill, James, Mfg. Co.

Dye House Floors.
Simpson Bros. Corporation.

Dye House Trucks.
Bailey, Frank.

Dye Sticks.
Bailey, Frank.
Haedrich, E. M.

Dye Tubs.
——See Tanks, Tubs and Vats.

Dyestuffs and Chemicals.
American Dyewood Co.
Atteaux, F. E., & Co.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Cassella Color Co.
Continental Color & Chemical Co.
Kalle & Co.
Ford, J. B., Co.
Geisenheimer & Co.
Johnson, Chas. A., & Co.
Klipstein, A., & Co.
Leyland, Thos., & Co.
Metz, H. A., & Co.
Roessler & Hasslacher Chemical Co.
Solvay Process Co.
Sykes, Walter F., & Co.
Thayer, Ed. M., & Co.

Dynamos.
——See Electric Lighting.

Edgings.
——See Tapes, Braids and Edgings.

Electrical Construction.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Company.
Warner, Chas. E.
Westinghouse Electric & Mfg. Co.

Electrical Engineer (Consulting.)
Puffer, William L.

Electrical Heating Devices.
Johns-Manville Co., H. W.

Electrical Supplies.
Johns-Manville Co., H. W.
Pettingell-Andrews Co.

Electric Fans.
American Blower Co.
Crocker-Wheeler Co.
General Electric Co.
Mass. Fan Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.
Warner, Chas. E.
Westinghouse Electric & Mfg. Co.
Wing, L. J., Mfg. Co.

Electric Hoists.
Yale & Towne Mfg. Co.

Electric Lamps.
Pettingell-Andrews Co.
Sturtevant, B. F., Company.

Electric Lighting.
General Electric Co.
Sturtevant, B. F., Company.
Warner, Chas. E.
Westinghouse Electric & Mfg. Co.

Electric Motors.
Crocker-Wheeler Co.
General Electric Co.
Peerless Electric Co.
Sturtevant, B. F., Company.
Warner, Chas. E.
Westinghouse Electric & Mfg. Co.

Elevators.
Morse, Williams & Co.
Salem Elevator Works.

Embroidery Machines for Hosiery and Knit Goods.
Walther, Otto.

Employees' Time Recorders.
Pettes & Randall Co.

Engine Stops.
Consolidated Engine Stop Co.
Engineers (Power Plant).
Roberts & Abbott Co.

Exhaust Heads.
Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.

Fans—Exhaust and Ventilating.
——See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co.
Scaife, W. B., & Sons.

Feed Water Pumps.
Goulds Mfg. Co.
Scaife, W. B., & Sons.

Feed Water Purifiers.
Philadelphia Water Purification Co.
Scaife, W. B., & Sons.
United Water Improvement Co.

Feeds.
——See Automatic Feeds.

Felt Hardeners.
Farrell Foundry and Machine Co.

Felting Machinery.
Farrell Foundry and Machine Co.

Filters.
American Water Softener Co.
Norwood Engineering Co.
Phila. Water Purification Co., The.
Scaife, W. B., & Sons.
United Water Improvement Co.

Finishing Machinery.
——See Dyeing, Drying, Bleaching and Finishing.

Fire Brick.
Borgner, Cyrus, Co.

Fire Extinguishers.
Badger, E. B., & Sons Co.
Johns-Manville Co., H. W.

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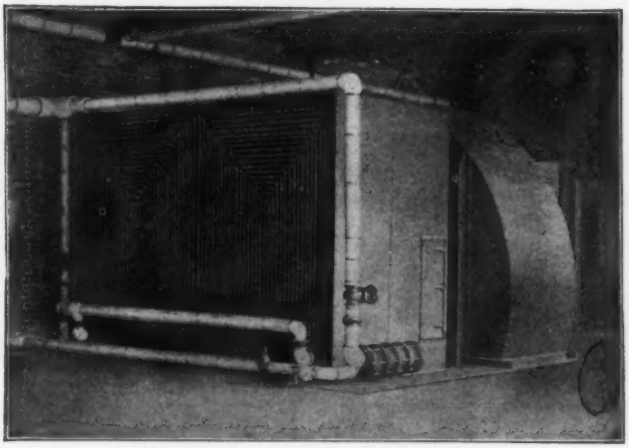
Ventilating and Heating

by the



Sturtevant System

Assures a pure, healthy atmosphere which may be maintained at a constant temperature regardless of the weather.

B. F. Sturtevant Co., Boston, Mass.

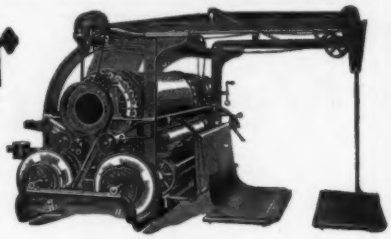
General Office and Works, Hyde Park, Mass.

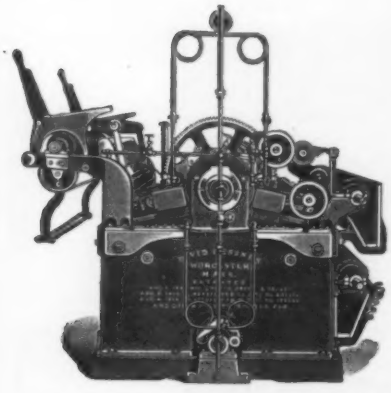
New York Philadelphia Chicago Cincinnati London

Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fan Blowers and Exhausters; Rotary Blowers and Exhausters; Steam Engines, Electric Motors and Generating Sets; Pneumatic Separators; Fuel Economizers; Forges; Exhaust Heads, Steam Traps, Etc. 410

David Gessner

Worcester, Mass.

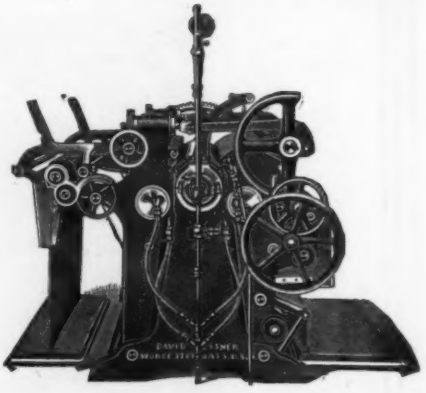




Latest Improved Cloth Finishing Machinery

—

Napping Machines and Presses a Specialty



Fire Hose.
Eureka Fire Hose Co.
Fire Hydrants.
Norwood Engineering Co.
Fire Insurance.
Home Insurance Co.
Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.
Fire Pumps.
—See Pumps.
Flax, Tow, Hemp and Jute Machinery.
Haskell-Dawes Machine Co.
Fairbairn-Lawson-Combes-Barbour, Ltd.
Fluted Rolls.
Diamond Textile Machine Works.
Hood, R. H.
Leigh, Evan A.
Riley, C. E., Company.
Thurston, A. G., & Son.
Flyers.
Bodden, Wm., & Son, Ltd.
Hopkins Machine Works.
Leigh, Evan A.
Forges.
Sturtevant, B. F., Co.
Forwarders.
Salvator Transfer, Inc.
Friction Clutches.
National Brake & Clutch Co.
Friction Cones.
Evans, G. Frank.
Fuel Economizers.
Green Fuel Economizer Co.
Sturtevant, B. F., Co.
Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co.
Hopkins Machine Works.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.
Garnetts.
Leigh, Evan A.
Smith & Furbush Machine Co.
Gas Blowers and Exhausters.
Sturtevant, B. F., Co.
Gas Engines.
Jones, Lewis.
Gassing Machines.
Stubbs, Joseph.
Gauges.
Crosby Steam Gage & Valve Co.
Walworth Manufacturing Co.
Gears.
Farrell Foundry and Machine Co.
New Process Raw Hide Co.
Philadelphia Gear Works, Inc.
Gear Cutting.
Farrell Foundry and Machine Co.
Gear Cutting Machine.
Whiton, The D. E., Co.
Generating Sets.
Crocker-Wheeler Co.
Sturtevant, B. F., Co.
Grids for Cards.
Schaellibaum, R., Co.
Grease.
Cook's, Adam, Sons.
Grease Cups.
Cook's, Adam, Sons.
Gut Cords and Strings.
Wentworth, M. W.
Heating.
—See Ventilating.
Heddles.
Steel Heddle Mfg. Co.
Stoddard, Haserick, Richards & Co.
Hoisting Apparatus.
Economy Engineering Co.
Larrabee, Jno. E.
Yale & Towne Mfg. Co.
Hosiery Boards.
Pearson, J. T.
Hosiery Labels.
Beck, Charles, Paper Co.
Kaumagraph Company.
Humidifying Apparatus.
American Moistening Co.
Bell Pure Air & Cooling Co.
Hydraulic Rams.
Power Specialty Co.
Hydro Extractors.
American Tool & Machine Co.
Broadbent, Thomas, & Sons.
Hunt, Rodney, Machine Company.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Whiteley, William, & Sons, Ltd.
Illuminating Engineer.
Puffer, William L.
Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.
Insurance (Casualty, Fire and for Loss of Profits.)
Home Insurance Co.
Maryland Casualty Co.
Ironing Machines for Knit Goods.
Craw, J. W., Laundry Machinery Co.
Jacquards.
Halton's, Thomas, Sons.
Knit Goods, Edgings, Trimmings, Etc.
Chapin, Geo. W.
Charles, W. B.
Cheney Bros.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Weimar Bros.
Knit Goods, Finishing Machines, Crochet, Etc.
Craw, J. W., Laundry Machinery Co.
Eastman Machine Co.
Hunt, Rodney, Machine Company.
Langston, Samuel M.
Merrow Machine Co., The.
Nye & Tredick Co.
Scott & Williams.
Union Special Machine Co.
Willcox & Gibbs Sewing Machine Co.
Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

Alphabetical Advertising Index, with page numbers, follows this list.

"O.K." PEERLESS INCANDESCENT LAMPS

Our "O.K." Peerless Lamps are without exception the best lamps for Mill Lighting. We know that if you give them a trial you will be more than satisfied.

We want your contract, and should be pleased to have our lamp expert call on you, and ascertain just what type of lamp is best adapted to your purpose.

Pettingell-Andrews Company,

BOSTON, - - - - - - - - MASS.

Knitting Machinery.
Boss Knitting Machine Co.
Brinton, H., & Co.
Claes & Fientje.
Cooper, Chas.
Crane Mfg. Co.
Excelsior Knitting Machine Mfg. Co.
Gormly, Robt. W., & Co.
Grosser Knitting Machine Co.
Hemphill Mfg. Co.
Jenckes, E., Mfg. Co.
Jones, Lewis.
Kinsey, Walter.
Koch, Edward W.
Lamb Knitting Mach. Mfg. Co.
Leighton Machine Co.
Mayo, Geo. D., Knitting Machine Co.
Mayo Knitting Machine & Needle Co.
National Automatic Knitter Co.
Nye & Tredick Co.
Paxton & O'Neill.
Ruth Machine Co.
Scott & Williams.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros.
Walter & Co.
Walther, Otto.
Wildman Mfg. Co.

Knitting Needles and Supplies.
Breedon's Wm., Son.
Brinton, H., & Co.
Continental Latch Needle Company.
Cooper, Chas.
Corey, Wm., Co.
Crane Mfg. Co.
Dodge Needle Co.
Excelsior Needle Co.
Grosser Knitting Machine Co.
Ives, L. T., Co.
Jarrard Needle Company.
Kolb, Frank E.
Lamb Knitting Machine Mfg. Co.
Manufacturers' Supplies Co.
Mayo Knitting Machine & Needle Co.
Page Needle Co.
Ruth Machine Co.
Treat, Orion.
Wardwell Needle Co.

Labeling Machines.
Beck, Chas., Paper Co., Ltd.

Lamps, Incandescent.
General Electric Co.
Pettingell-Andrews Co.
Westinghouse Electric & Mfg. Co.

Lawyers (Mercantile).
Yeomans & Ironside.

Leather.
Bowes, L. M., Co.

Loom Clutches.
Natl. Brake & Clutch Co.

Loom Pickers.
Garland Mfg. Co.

Looms.
Crompton & Knowles Loom Works.
Draper Company.
Kilburn, Lincoln & Co.
Leigh, Evan A.
Lowell Machine Shop.
Mason Machine Works.
Stoddard, Haserick, Richards & Co.
Whitin Machine Works.

Loopers.
Beattie Machine Works.
Hepworth, John W., & Co.
Leighton Machine Co.

Lubricators.
Cook's, Adam, Son.
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.

Lumber (Box, Etc.).
Connecticut Box Co.

Lumpers.
Diamond Textile Machine Works.
Gerry, George, & Son.
Schofield, Wm., Co.

Machinery Dealers.
Jefferson Ed., & Bro.
Kinsey, Walter.
Lamb, J. K., Textile Mach. Co.
Schofield, Geo. L.
Speed & Stephenson.
Stead, Arthur.
Taylor, James.

Machinists' Tools.
Whitin, The D. E., Co.

Mails.
Walder, J.

Measuring and Folding Machines.
Curtis & Marble Machine Co.
Elliott & Hall.
Parks & Woolson Machine Co.

Mechanical Draft.
American Blower Co.
Goss & Bryce.
Green Fuel Economizer Co.
Massachusetts Fan Co.
Sturtevant, B. F., Co.

Mechanical Engineers.
American Blower Co.
Main, Chas. T.
Philadelphia Drying Machinery Co.
Prather Engineering Co.
Sturtevant, B. F., Co.

Mercerizers.
Greenwood & Bault, R.
Home Bleach & Dye Works.
Lorrimer, Wm. H., Sons Co.
Luzern Cotton Yarn Co.

Mercerizing Machinery.
Parks & Woolson Machine Co.
Butterworth, H. W., & Sons.
Klauder-Weldon Dyeing Machine Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.

Metallic Fire-proof Window Frames and Sashes.
Badger, E. B., & Sons Co.

Metallic Packing.
Power Specialty Co.

Mill Architects.
—See Architects and Mill Engineers.

Mill Brushes.
—See Brushes.

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Mill Builders and Engineers.
Ferguson, John W.

Mill Sewing Machines.
——See Sewing Machines and Supplies.

Mill Supplies.
American Supply Co.
Bamford & Smith.
Barker, James.
Buckley's, Benj., Son, Gun Mill.
Crosby Steam Gage and Valve Co.
Easton-Burnham Co.
Eureka Fire Hose Co.
Garland Mfg. Co.
Jefferson, Ed., & Bro.
Kolb, Frank E.
Lane, W. T., & Bro.
Leigh, Evan A.
Lowe, S. C.
Main Belting Co.
Morris & Co.
Murphy, E. W., & Co.
Norwich Belt Mfg. Co.
Philadelphia Drying Machinery Co.
Riley, C. E., Company.
Richardson Bros.
Schaellibaum, R., Co.
Shaw, Victor, Ring Traveler Co.
Stephenson Mfg. Co.
Stoddard, Haserick, Richards & Co.
Thurston, A. G., & Son.
Ward & Vandegrift.
Walworth Manufacturing Co.

Mineral Wool.
Johns-Manville Co., H. W.

Motors.
——See Electric Motors.

Napping Machinery.
American Napping Machine Co.
Birch Bros., Somerville Machine Wks.
Curtis & Marble Machine Co.
Gessner, David.
Jones, Lewis.
Leigh, Evan A.
Parks & Woolson Machine Co.
Whiteley, William, & Sons, Ltd

Noils (Silk).
Malcolm Mills Co.
Ryle, Wm., & Co.

Oil Cups.
Walworth Manufacturing Co.

Oils.
Borne, Scrymser Co.
Cook's, Adam, Son.
Excelsior Wool Oil Compound Co.
Murphy, E. W., & Co.
New York & New Jersey Lubricant Co.
Stephenson Mfg. Co.
Zurn, O. F., Co.

Overseaming Machines.
Merrow Machine Co.
Willcox & Gibbs Sewing Machine Co.

Packings.
Johns-Manville Co., H. W.

Pantagraphs for Mill Engraving.
Johnson, C. A., & Co.

Paper.
Merwin Paper Co.
Richardson Bros.
Smythe, J. L. N., Paper Co.

Paper Boards.
Merwin Paper Co.
Smythe, J. L. N., Paper Co.

Paper Box Machinery.
Beck, Chas., Paper Co., Ltd.
Langston, Samuel M.

Patent Solicitors.
Crosby & Gregory.
Howson & Howson.

Perforated Metals.
Hopkins Machine Works.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.

Pipe and Boiler Covering.
Johns-Manville Co., H. W.

Pipe Threading Machines.
Oster Mfg. Co.

Pipes and Fittings.
Pancoast, Henry B., & Co.
Scaife, W. B., & Sons.
Walworth Manufacturing Co.

Plastic Cement.
Griffin Roofing Co.

Pneumatic Conveying.
——See Ventilating.

Portable Hoists.
Larrabee, Jno. E.
Power Plant Engineers (Steam Electric and Water).
Roberts & Abbott Co.

Power Transmission Machinery.
American Drying Machinery Co.
American Mfg. Co.
American Pulley Co.
Cresson, Geo. V., Company.
Evans, G. Frank.
Farrell Foundry and Machine Co.
Hunt, Rodney, Machine Company.
Hunter, Jas., Machine Co.
Kilburn, Lincoln & Co.
Latshaw Pressed Steel & Pulley Co.
Philadelphia Drying Machinery Co.
Plymouth Cordage Co.
Reeves Pulley Co.
Saginaw Manufacturing Co.
Schofield, Wm., Co.
Sellers, William, & Co.
Textile Finishing Machinery Co.

Preparatory Machinery (Cotton).
Howard & Bullough Am. Machine Co.
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E., Company.
Saco & Pettee Machine Shops.

Presses.
Boomer & Boschert Press Co.
Butterworth, H. W., & Sons Co.
Curtis & Marble Machine Co.
Gessner, David.
Hart, Charles.
Phila. Drying Machinery Co.
Spence & Rideout.
Textile Finishing Machinery Co.
Woonsocket Machine & Press Co.

Press Papers.
Merwin Paper Co.

Pressure Regulators.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Printing Machinery (Cloth).
Rice, Barton & Fales Machine & Iron Company.

Pulleys.
——See Power Transmitting Machinery.

Pulley Covering.
Warren Company, The.

Pumps.
Goulds Mfg. Co.
Hunt, Rodney, Machine Company.
Murphy, Harry F., & Co.
Textile Finishing Machinery Co.

Pump Governors.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Purifying & Filtration Plants.
Norwood Engineering Co.
Philadelphia Water Purification Co.
Scaife, W. B., & Sons.
United Water Improvement Co.

Quillers.
Foster Machine Co.
Payne, G. W., & Co.

Rag Pickers.
Diamond Textile Machine Works.
Schofield, Wm., Co.
Smith & Furbush Machine Co.

Ramie Tops and Noils.
Tierney, Frank A.

Raw Hide Gears.
New Process Raw Hide Co.
Philadelphia Gear Works, Inc.

Reed and Harness Manufacturers.
American Supply Co.
Garland Mfg. Co.
Walder, J.

Reducing Valves.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Regulators (Pressure).
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Remnants.
Feingold, H. & D.

Ribbons.
Cheney Bros.

Ring Travelers.
DeHaven Mfg. Co.
Shaw, Victor, Ring Traveler Co.

Roofing.
Griffin Roofing Co.
Lincoln Waterproof Cloth Co.
Standard Paint Co.

Roofing Material.
Johns-Manville Co., H. W.

Roller Leather.
Bowes, L. M., Co.

Rope.
American Mfg. Co.
Plymouth Cordage Co.

Rope Transmission.
American Mfg. Co.
Cresson, Geo. V., Company.
Hunt, Rodney, Machine Company.
Plymouth Cordage Co.

Roving Cans.
Hill, James, Mfg. Co.

Rubber Rolls.
American Wringer Co.

Ruberoid Roofing.
Standard Paint Co.

Sample Cards.
Hatheway-Sheffield Co., The.

Scallop Machines.
Merrow Machine Co.

Alphabetical Advertising Index, with page numbers, follows this list.

GRIFFIN ROOFING COMPANY
506 W. 26 ST., NEW YORK CITY BADGER AND AVON AVE., NEWARK
ESTIMATES FURNISHED FOR
GRAVEL, SLAG, PLASTIC CEMENT, OR ANY KIND OF COMPOSITION ROOFING
ON NEW OR OLD BUILDINGS FLAT OR STEEP ROOFS.
OUT OF TOWN WORK AT SLIGHT ADVANCE OVER CITY PRICES

RUBEROID ROOFING

(Reg. U. S. Pat. Office.)

STANDARD FOR FIFTEEN YEARS.

The original weather-proof, elastic and acid-resisting roofing. Resists the great heat and the acid fumes of dyehouses, etc. Highly fire-resisting. Contains no tar. Especially useful on saw tooth roofs. Will outlast tin and iron. Let us send you samples and booklet R. In stock in all large cities.

The Standard Paint Company, Sole Manufacturers. 100 William Street, New York.

Schools.
American School of Correspondence.
International Correspondence Schools.
Lowell Textile School.
New Bedford Textile School.
Philadelphia Textile School.

Secondhand Machinery.
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Draper Co., The.

Sewing Machines and Supplies.
Arlington Mch. Wks. (Arthur Birch, prop.)
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Walter & Co.
Willcox & Gibbs Sewing Machine Co.

Shafting, Hangers, Etc.
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Shearing Machinery.
—See Dyeing, Drying, Bleaching and Finishing.

Sheet Metal Work.
Barney Ventilating Fan Works.
Scaife, W. B., & Sons.
Sterling Blower & Pipe Mfg. Co.

Shell Rolls.
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Shook (Box).
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Mason Machine Works.
Stoddard, Haserick, Richards & Co.
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Hall, I. A., & Co.

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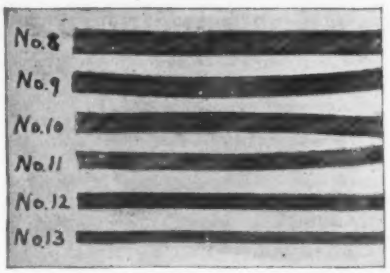

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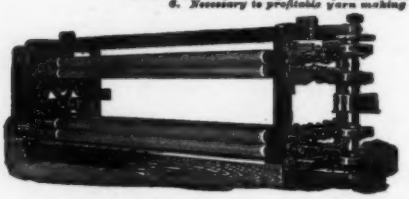

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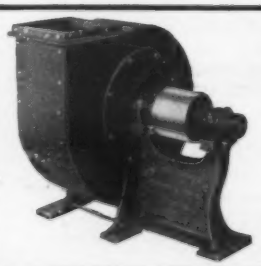

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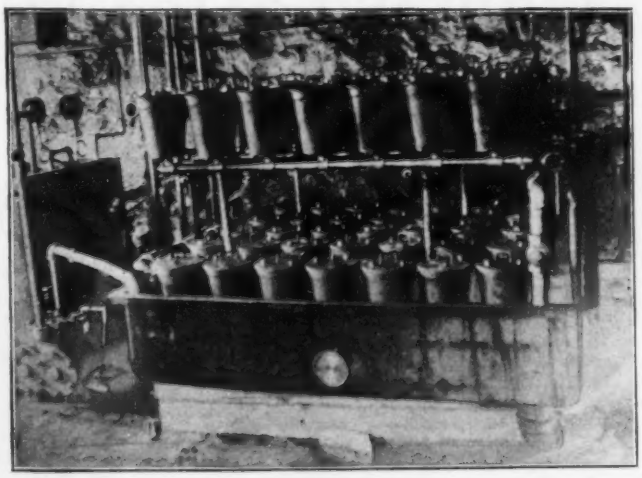

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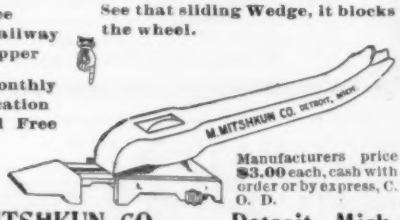

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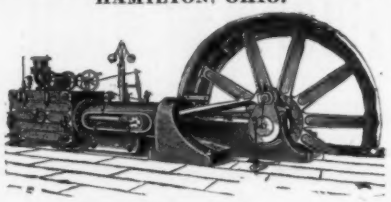

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The following advertisements are a portion of those of superintendents and overseers, of whom full particulars are on file at this office. Manufacturers who may be in need of such men may address them in care of Textile World Record, or state their requirements directly, and the addresses of suitable men will be furnished without charge.

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Superintendent of a Woolen Mill. Position wanted by a man 40 years of age, American, married. Worked on kerseys, thibets, meltons, cheviots, cassimeres and government goods. Familiar with all kinds of stock. First-class reference. 3771, Textile World Record, Boston.

Asst. Supt, or Overseer of Dressing. Position wanted by a man 30 years of age, married and American. Has worked on fancy cotton, woolens and worsteds, and all kinds of high and low grade goods. Is familiar with all kinds of woolen and cotton machinery. Good references. 3537, Textile World Record.

Superintendent or Designer. Position wanted by a man 50 years of age, married, American. Has manufactured all kinds of woolen and worsted goods, cotton worsteds, wool, cotton and shoddy mixes. Is familiar with all kinds of machinery. Good references. 3670, Textile World Record, Boston, Mass.

Superintendent of a Woolen Mill. Position wanted by an American. Has had experience on satinets, unions, cassimeres, worsted goods, etc. Is familiar with all kinds of woolen machinery. First-class references. 1537, Textile World Record, Boston, Mass.

Superintendent and Designer, or assistant superintendent or boss weaver in a woolen mill. Position wanted by a man 36 years of age, American, married. Worked on all kinds of woolen and worsted goods, also blankets. Understands all kinds of machinery, has worked in all departments of a mill. Good referencees. 3845, Textile World Record, Boston.

Designer or Assistant Superintendent of a worsted or woolen mill. Position wanted by a man, 25 years of age, single. Has worked on fancy and cotton worsteds and woolens of all kinds. Has had seven years' practical experience in different departments of worsted and woolen mills. Good references. Could accept a position at once. 3851, Textile World Record, Boston.

Superintendent and Designer in a woolen mill. Position wanted by a man, 39 years of age, single. Has worked on men's suitings, overcoatings, box cloth, cheviots, covert mixes made from wool, cotton and shoddy. First-class recommendations. 3871, Textile World Record.

Manager or Superintendent of a woolen mill. Position wanted by a man, 50 years of age, Scotch, married. Worked on woolen and worsted goods, men's and women's wear, beavers, face finished goods. Twelve years as manager in his present position. Will be open for engagement about April 1st. 3862, Textile World Record, Boston.

Designer or Assistant Superintendent in a woolen mill. Position wanted by a man, 38 years of age, married, American. Worked on all kinds of worsteds, woolens and dress goods. Could accept a position at short notice. Good references. 3865, Textile World Record, Boston.

Superintendent of a Worsted Yarn Mill or overseer of drawing, spinning and twisting. Position wanted by a man, 32 years of age, Scotch, married. Worked on wool from 1/4 blood up to fine domestic and Australian wools to all counts. Familiar with Prince, Smith, Lowell, Taylor, Wardsworth, Fayles & Jenks, Foster, Collins Bros.' machinery. Good references. 3847, Textile World Record, Boston.

Superintendent of a Worsted Yarn Mill. Position wanted by a man, 38 years of age, American, married. Worked on all kinds of yarns, Bradford system. Is recommended by leading mills. 3855, Textile World Record, Boston.

Assistant Superintendent. Worked on woolens and worsteds of all kinds. Graduate of a Textile School. American; 23 years of age; single. 3228, Textile World Record.

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Superintendent or assistant superintendent of a cotton mill. Position wanted by a man 29 years of age; married. Is experienced on sheetings, shirtings, ginghams, flannelettes, domets and fancy hosiery yarns. Is expert on colored work. Is familiar with all kinds of American and English carding and spinning machinery. First-class references. 1718, Textile World Record, Boston, Mass.

Cotton Superintendent. Worked on dress goods, shirtings, skirtings, ginghams, cotton flannels and blankets. Familiar with all kinds of cotton machinery. Age 37, married; first-class references. 1432, Textile World Record.

Superintendent of cotton mill, spinning or weaving, assistant superintendent or designer or overseer of weaving, plain or fancy goods. Age 28; English; married; first-class references. 3243, Textile World Record.

Superintendent, assistant or boss weaver and designer. Position wanted by a man, 35 years of age, English, married. Familiar with lappett and dobby work, lenos, silk handkerchiefs and all kinds of cotton goods made on dobby and box motion looms. Good reference. 3793, Textile World Record, Boston, Mass.

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Cotton Superintendent or overseer of carding. Worked on all white goods yarns from 12s to 150s. Familiar with the Lowell, Saco & Pettee revolving flat cards. Age 37; married; first-class references. 1898, Textile World Record.

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Supt., Asst. Supt., or Overseer of Carding. Position wanted by a man 39 years of age, married, American. Is experienced on all kinds of cotton colored goods, long or short stock, also on bleached stock. Is familiar with Colvin, Whitin and Crompton looms, and all makes of carding and spinning machinery. Good references. 3585, Textile World Record.

Cotton Superintendent wants position. Now engaged, but wishes to change to better condition. Worked on all kinds of plain cotton goods, prints, sheetings, ginghams, etc. Familiar with all kinds of cotton machinery. Will not go West, South or Canada. Age 43, married, first-class references. 2005, Textile World Record.

Superintendent or boss carder of carding and spinning in cotton mill. Familiar with all kinds of cotton yarns, including high and low stock; familiar with combs; first-class references, 36 years of age; married. 3290, Textile World Record, Boston, Mass.

WOOLEN CARDERS.

Overseer of Carding. Position wanted by a man 30 years of age, married, American. Has worked on all kinds of woolen, cotton and shoddy mix goods and felts. Is familiar with all makes of American and English carding machinery. Good references. 3636, Textile World Record, Boston, Mass.

Overseer of Woolen Carding or second hand in a large mill. Position wanted by a man, 38 years of age, married, and has worked on all classes of wool, cotton and shoddy mixed goods. Understands all kinds of carding machinery. Will not go West or Canada. Could be employed at short notice. Good references. Address 3868, Textile World Record, Boston.

Overseer of Woolen Carding or second hand in a large mill. Position wanted by a man, 40 years of age, American, married. Has worked on all kinds of stock, cotton, wool and shoddy. Wants a position in the New England States only. Good references. 3869, Textile World Record, Boston.

Overseer of Carding. American, 36 years of age, with 6 years' experience as overseer. Has been working in large mills in Massachusetts and brings good references. Worked on all grades wool, cotton and shoddy mixes. Good manager of help and would consider a first-class second hand's position. 3375, Textile World Record, Boston.

Overseer of Carding in Small Mill, or Second Hand in Large Mill. Position wanted by a young man with good references, worked in woolen and knitting mills on D. & F., Lombard, Cleveland cards on all kinds of stock. 3693, Textile World Record.

Overseer of Carding. Position wanted by a man 42 years of age, American. Has worked on all kinds of wool, cotton and shoddy mix goods. Is familiar with Cleveland, Lombard and Davis & Furber carding machinery. Good references. 3653, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 54 years of age, English, married, has worked on all kinds of stock from the highest to the lowest, also knitting yarns. First class references from leading mills where employed. Could take position at once. 3695, Textile World Record.

Overseer Drawing, Spinning or Twisting. American, 35 years of age, with a number of years' experience, wants position. Worked on nearly all grades of yarns from fine to coarse, and on nearly all machinery used in this work. 3345, Textile World Record, Boston.

Overseer of drawing and spinning. Position wanted by a man, English, 37 years of age, married. Worked on superfine and fine merinos, demi lustres, mohair, etc. Familiar with Prince, Smith, Hall & Stells, J. B. Farrars and Lowell Machine Shop machinery. Good references. 3478, Textile World Record, Boston.

Overseer of Carding. Position wanted by a man 36 years of age, married, German. Has worked on all kinds of all wool, cotton and shoddy mix goods. Is familiar with Furbush, Smith and Bridesburgh carding machinery. Good references. 3606, Textile World Record, Boston, Mass.

Boss Carder or Superintendent of a shoddy mill. Familiar with all kinds of stock, from highest to the lowest grades. All makes of woolen carding machinery. 30 years of age; married; American. 3307, Textile World Record, Boston, Mass.

Overseer of Carding and spinning. Position wanted by a man 40 years of age, American. Has worked on all kinds of stock, cotton, wool and shoddy, and all numbers of yarn from 7/8 to 8 run. Is familiar with Davis & Furber, Johnson & Bassett, Lombard, and Cleveland carding and spinning machinery Good references. 3577, Textile World Record, Boston, Mass.

Overseer of Carding and spinning. Position wanted by a man 40 years of age, married. Is experienced on all kinds of stock and all numbers of yarn. Is familiar with Davis & Furber, Johnson & Bassett, Furbush, and Bridesburgh carding and spinning machinery. Good references. 3580, Textile World Record, Boston, Mass.

WOOLEN SPINNERS.

Overseer of Woolen Spinning. Position wanted by a man 40 years of age, American, married. Has worked on all kinds of yarn and stock. Familiar with D. & F. and J. & B. mules. Good reference. 3818, Textile World Record, Boston, Mass.

Overseer of Spinning. American, with experience on nearly all classes of woolen and worsted goods, and on all machinery used in his work, wants position in the East. Best of references furnished. Wants first-class position. 3384, Textile World Record.

Overseer of Carding and Spinning in woolen mill. Position wanted by a man 40 years of age, married. Worked on cassimeres, tweeds, ladies' dress goods, blankets, mackinaws, flannels and carriage cloths, D. & F. cards and mules and Johnson and Bassett mules. Would prefer a position in the west or middle west. 3464, Textile World Record, Boston.

Overseer of Woolen Spinning. Position wanted by a man, 45 years of age, American, married. Has worked on all kinds of stock, cotton, wool and shoddy. Familiar with the D. & F., J. & B., Brother Operators, Dancroft and Wright machines. Good reference. 3794, Textile World Record, Boston, Mass.

Woolen Boss Spinner, or would accept a good secondhand position. Familiar with all kinds of American spinning machinery; Davis & Furber, Johnson & Bassett, English mules, Curtis and Platt. First-class references; age 48; English. Could take a position at once. 589, Textile World Record.

Overseer of Woolen Spinning. Position wanted by a man, 41 years of age, American, married; worked on all kinds of wool, cotton shoddy mixed goods, from one to five run. Familiar with D. & F., J. & B. and Bridesburg spinning machines. Good recommendations. 3755, Textile World Record, Boston.

Second Hand in a Woolen Spinning Room. Position wanted by a young man 30 years of age, single, has had a number of years' experience as spinner and has been allowed to fix his own machines. Would like to get a position as second hand where he could learn to fix mules under a good man. He is familiar with D. & F. or J. & B. machines, and wants a position in the West or Middle West. 3707, Textile World Record.

Second Hand in the Woolen Spinning Room. Position wanted by a man 31 years of age, single, worked on all kinds of yarn from 3/4 to 10 run on all kinds of stock, cotton, woolen shoddy, familiar with D. & F. mules and operators. First class refereces. 3715, Textile World Record.

Overseer of Woolen Spinning. Position wanted by a man, 48 years of age, American, married. Has worked on all kinds of yarns from 3/4 to 8 run, all kinds of stock. Familiar with J. & B. and D. & F. spinning machinery. Good reference. 3804, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning. Position wanted by a man, 48 years of age, American, married. Worked on all kinds of yarn from 1/2 to 10 run, all kinds of stock, wool, cotton and shoddy mixes. Familiar with J. & B., D. & F., Parr, Curtiss, Bideford, Pault Pavercroft mules. Will not go West or South. Good reference. 3810, Textile World Record, Boston, Mass.

Overseer of Worsted Drawing or drawing and spinning. Position wanted by a man, 29 years of age, single, English. Has worked on all grades of wool from the longest Scotch to the finest Australian wools. Familiar with all makes of English drawing, spinning and twisting machinery. Also Lowell machines. Good reference. 3799, Textile World Record, Boston, Mass.

Overseer of Worsted Spinning and twisting. Position wanted by a man, 32 years of age, single, English. Worked on all kinds of carpet and hosiery yarn and has been overseer in leading mills in England, Scotland and United States. Familiar with all kinds of worsted spinning machinery. Good reference. 3808, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning. Position wanted by a man 40 years of age, widower, worked on all kinds of yarns, wool, cotton and shoddy mixed. Familiar with the J. & B. and D. & F. machines. First class recommendations. 3720, Textile World Record.

WOOLEN WEAVERS.

Overseer of Weaving or Second Hand in large mill. Position wanted by a man 41 years of age, an American, married, has worked on cassimeres, fancy worsteds, suitings, dress goods and overcoatings, has had many years' experience in leading mills, understands the Crompton & Knowles looms, good references. 3703, Textile World Record.

Overseer of Weaving or Asst. Supt. Position wanted by a man 48 years of age, married. Has worked on all kinds of fancy woolen and worsted goods, wool and cotton and wool and shoddy mixes, and fancy cotton dress goods; can also design. Is familiar with Crompton & Knowles looms, Gilbert looms and dobby-heads, and Whitin plain and fancy looms. Has good references. 3501, Textile World Record.

Overseer of Weaving and Designing. Worked on plain and fancy goods, also jacquard work. First-class recommendations, 33 years of age, English. 1397, Textile World Record, Boston, Mass.

Overseer of Woolen Weaving. Position wanted by a man 36 years of age; married. Has worked on satinets, unions, cassimeres, men's wear, dress goods, overcoatings and blankets. Is familiar with Knowles, Gilbert, Stafford and Crompton looms. First-class references. 1790, Textile World Record, Boston, Mass.

Overseer of Weaving, or weaver and designer. American, 40 years of age, with experience on all grades men's wear and all makes of woolen looms, pickers, spoolers, twisters, etc., wants a position in the East. 3379, Textile World Record.

Boss Weaver in Woolen Mill, or would accept a good loom fixing position. Worked on satinets, cotton and woolen warp goods, sheetings, shirtings and ducks. Also worked on cotton and woolen jute bagging. 45 years of age. 1806, Textile World Record.

Overseer of Weaving. Position wanted by a man, 39 years of age, American, married. Could take a position at short notice. Familiar with all kinds of woolen and worsted goods. First class recommendations. 3727, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a man, 40 years of age, married, an American. Worked on cheviots, ladies' dress goods, janes and woolen goods of all kinds. Familiar with the Crompton & Knowles looms. Good recommendations. 3725, Textile World Record, Boston, Mass.

Woolen Boss Weaver. Worked on worsteds, woolens of all kinds, also dress goods. American; 38 years of age; married. 3231, Textile World Record.

Overseer of Weaving. Position wanted by a man 42 years of age, American, married, worked on all kinds of woolen and worsted goods, familiar with Crompton & Knowles and Crompton & Thayer and Jacquard looms, first class recommendation. 3694, Textile World Record.

Overseer of Weaving. Position wanted by a man 34 years of age, married, American. Has worked on cotton goods, cassimeres, fancy worsteds, and all kinds of woolen goods. Is familiar with Crompton & Knowles looms. Good references. 3687, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a man 41 years of age, married, German. Has worked on wool and worsted goods of all descriptions, and is familiar with Crompton & Knowles and Crompton Thayer looms. First-class references. 3634, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a steady, strictly temperate and reliable married man. Has a good record for being a manager of help and a hustler for production. Worked in last place 12 years on all kinds of woolen goods; is now employed. Used to Crompton & Knowles and Crompton & Thayer looms. 3623, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a man 39 years of age, American. Has worked on unions, cassimeres, shirtings and overcoatings. Is familiar with Crompton & Knowles looms. Good references. 3601, Textile World Record, Boston, Mass.

FINISHERS

Overseer of Woolen Finishing. Position wanted by a man, 45 years of age, American, married. Worked on fancy and piece dye worsteds and woolens. Out of a position on account of mill closing. Could be employed at once. Good references. 3840, Textile World Record, Boston.

Overseer of Woolen Finishing. Position wanted by a man, 51 years of age, American, married. Has worked on all kinds of woolen goods and has had a wide experience on face finished goods. Is now employed in a large mill, but desires to make a change. Good references. 3861, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 42 years of age, American and married. Has worked on all classes of fancy worsteds and is familiar with all kinds of finishing machinery. Good references. 3497, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 40 years of age, married and American. Has worked on all kinds of wool and worsted and cotton mix goods and cotton worsteds. Is familiar with all kinds of machinery used in wet and dry finishing. Good references. 3536, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by an American, 40 years of age and married. Worked on all kinds of woolen and worsted goods and satinets. Familiar with all kinds of finishing machinery. 3475, Textile World Record, Boston.

Overseer of Wet and Dry Finishing. Position wanted by a man 30 years of age. Thoroughly competent from loom to case on all kinds of woolen and worsted fabrics of all grades. Thoroughly understands carbonizing and neutralizing for both sweet and sour and steam finishing. Open for engagement on fair notice. Strictly temperate and a hustler. First-class references. 3508 Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 30 years of age, married, American. Has worked on worsted serge cassimeres, flannels, overcoatings, cloakings, dress goods, meltons, kerseys, union, etc. Is familiar with all kinds of finishing machinery. Good references. 3668, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 47 years of age, married and American. Has had 21 years' experience on all kinds of woolen and worsted goods, cotton and shoddy mixes, union goods and low grade goods. Is familiar with all makes of finishing machinery. First-class recommendations. 3532, Textile World Record Boston, Mass.

Overseer of Woolen Finishing. 44 years of age; married; Scotch. Worked on ladies' dress goods and face finished goods from loom to case. 3446, Textile World Record.

Overseer of Woolen Finishing. Position wanted by a man, 35 years of age, American, married; worked on all kinds of woolen and worsted goods, kerseys, beavers and meltons. First-class recommendations. 3753, Textile World Record, Boston.

Overseer of Finishing. Position wanted by a man 38 years of age. Has worked on all kinds of worsted and woolen goods, and face finish finished goods. Is familiar with all kinds of finishing machinery. Good references. 3571, Textile World Record, Boston, Mass.

Woolen and Worsted Finisher. 15 years' experience as overseer; age 39; married; understands all classes of goods, face goods, undressed worsteds, serges, men's wear, cloakings, dress goods, fancy and plain; can finish from loom to case. 3367, Textile World Record, Boston.

Overseer of Finishing. American, 27 years of age, with 7 years' experience. Worked on cassimeres, dress goods, all face finished goods, also fancy and cotton worsteds, piece dyes, satinets, etc. Understands nearly all kinds of machinery, old and modern. 3338, Textile World Record, Boston.

Overseer Wet and Dry Finishing. American, 30 years of age, with experience on nearly all grades of woolen mixes, cotton warp goods, steam face goods, piece dye, etc. Six years as overseer, with good references. 3376, Textile World Record.

DYERS.

Bleacher and Dyer of cotton knit goods. Position wanted by a man 27 years of age, married, English. Has worked on web dyeing and bleaching, also garnet dye and bleaching, aniline black on hosiery. Will not go south. Good reference. 3763, Textile World Record, Boston.

Overseer of Dyeing. Position wanted by a man, 37 years of age, Scotch, married. Has worked on sulphur blacks, indigo, alizarine, warps of fancy shades, raw stock, and skein yarns. Is familiar with Klauder & Weldon and Scotch tubs. Good references. Could take a position at short notice. 3842, Textile World Record, Boston.

Overseer of Dyeing on cotton piece goods and raw stock. Position wanted by a man, 26 years of age, single. Has worked on the above goods for a number of years and is familiar with jig dyeing. Could be employed at short notice. Good references. 3854, Textile World Record, Boston.

Overseer of Dyeing in a woolen mill. Position wanted by a man, 42 years of age, American, married. Has worked on raw stock, both cotton, wool and shoddy, piece dyes, indigo vats, rags, etc. Good references. 3857, Textile World Record, Boston.

Practical Dyer is open for engagement and would like to correspond with responsible firm. Has a thorough knowledge of the dyeing of hosiery and underwear, cotton, wool and mixed goods in all percentages, balbriggans, etc. In last position 9 1/2 years. 1513, Textile World Record.

Chemist or Boss Dyer on hosiery or cotton goods. Worked on hosiery, underwear, yarns and cotton raw stock. Familiar with all kinds of dyeing machinery; 27 years of age; American; first-class recommendations. 3289, Textile World Record, Boston, Mass.

Overseer of Dyeing. Englishman, with 20 years' experience as overseer in this country, wants position in the East. Accustomed to dress goods, plain and mixed, piece dyes on worsted, fine broadcloth, kersey cloaking, etc. 3343, Textile World Record, Boston.

Overseer of Dyeing. Position wanted by a man 41 years of age. Married, English, with good references from mills where employed. Worked on all wool, cotton and shoddy worsted piece dyes, slubbing, raw stock and indigo vats. 3479, Textile World Record, Boston.

Overseer of Dyeing. Position wanted by a man, 35 years of age, married, English. Has had a thorough training in chemistry. Has worked on wool, cotton and shoddy raw stock, piece dyes, yarn bleaching, scouring, extracting, etc. Familiar with alizarine colors, all kinds of dyeing and scouring machinery. First class recommendations. 3736, Textile World Record, Boston, Mass.

Overseer of Dyeing. Position wanted by a man 30 years of age, American. Has worked on worsted and cotton yarns, mercerized piece dyes, fast shades on raw stock and slubbing. Is familiar with all kinds of dyeing machinery. Good references. 3592, Textile World Record, Boston, Mass.

Boss Dyer. Worked on wool worsteds, cotton raw stock and piece dyes. 47 years of age; married; Italian. Take a position at short notice. 3441, Textile World Record.

Overseer of Dyeing. Position wanted by a man 51 years of age, married, with A-1 references. Worked on stock for Traction and Army goods, Wood and Bisulphate Vats, Natural and Synthetical Indigo, also stock for cassimeres, blankets, robes, shawls, cotton, wool, shoddy mixes, cotton warps, mercerized effects. 3692, Textile World Record.

Overseer of Dyeing, Bleaching and Scouring. Position wanted by a man 35 years of age, married, American. Has worked on all kinds of knit goods, cassimeres, worsteds dyed in raw stock and in piece. Is familiar with all kinds of dyeing, bleaching and scouring machinery. Good references. 3644, Textile World Record, Boston, Mass.

Overseer of Dyeing. Position wanted by a man 32 years of age, married. Makes a specialty of fast black on hosiery and yarns, rumble and silk finish, also fancy colors and bleaching. Is familiar with all kinds of machinery used in hosiery and yarn dyeing. Good references. 3559, Textile World Record, Boston, Mass.

KNITTERS.

Superintendent or Overseer of Knitting. Position wanted by a man, 35 years of age, American, married. Has worked on all kinds of goods made on spring needle machines, specialty fleeced lined goods. Familiar with Thompkins Bros., Campbell, Clute, Cooper & Wildman latch needle. Good references. 3867, Textile World Record, Boston.

Superintendent of a Knitting Mill. Position wanted by a man, 37 years of age, single. Has worked on all kinds of wool and cotton, both winter and summer underwear. Is familiar with all kinds of knitting machines. First-class references. Can be employed in about a week's notice. 3844, Textile World Record, Boston.

Overseer of Knitting. Position wanted by a man, 29 years of age, American, married. Worked on sweaters, cardigan jackets, ladies' golf jackets, wool and cotton ribbed underwear and wool overshirts. Familiar with McMichael, Wildman, Scott & Williams, Stafford & Holt, Leighton, Fisher, Nye & Tredick, Lamb, Campbell & Clute machinery. Good references. 3846, Textile World Record, Boston.

Overseer of Knitting on Lamb knitting machines. Position wanted by a man, 28 years of age, single. Has worked on ladies', men's, children's full fashioned cotton, wool, merino, silk custom work underwear. Is familiar with Lamb knitting machines and some experience on Champion. Could accept a position at once. Good references. 3856, Textile World Record, Boston.

Overseer of Knitting in hosiery mill. Worked on wool, cotton and worsted plated hosiery. Familiar with the old National, Electric, Mayo, Campbell, Standard, Branson & Hepworth loopers; McMichael & Wildman ribbers. Good references. 3859, Textile World Record, Boston.

Superintendent or Manager of an underwear mill. Position wanted by a man 40 years of age, married and American. Has worked on all kinds of men's and women's underwear. Is familiar with Union Special, Merrow, Singer, National, Wheeler & Wilson and Imperial sewing machines and Nye & Tredick and McMichael & Wildman knitting machines. Has first-class recommendations. 1971, Textile World Record, Boston, Mass.

Overseer of Knitting. American, 31 years of age, with 10 years' experience in knitting room as second hand and overseer. Worked on men's gauze underwear, and on plain woolen and plush work. Wants position in the East. 3350, Textile World Record.

Superintendent or boss knitter. Worked on men's fine balbriggan, ladies', men's and children's wool underwear. Familiar with all kinds of knitting machinery. 27 years of age; American. 3259, Textile World Record.

Overseer Boarding and finishing hosiery. All kinds of men's, women's and children's hosiery, except silk; age 41;; American; married. Can furnish references. 3035, Textile World Record.

Superintendent of a Knitting Mill. Position wanted by a man 55 years of age. Is experienced on all kinds of wool and merino underwear. Is familiar with all kinds of knitting machinery. Good references. 3620, Textile World Record, Boston, Mass.

Superintendent of Knitting Mill. Position wanted by a man 26 years of age, married, American. Is experienced on men's overshirts, balbriggan ribbed goods, fleece and novelties, and is familiar with all kinds of knitting machinery. Good references. 3637, Textile World Record, Boston, Mass.

Superintendent of Knitting Mill. Position wanted by a man 43 years of age, married, American. Is experienced on all classes of knit underwear, including fleece lined. Is familiar with Tompkins, Cooper, Snyder & Fisher knitting machines. Good references. 3645, Textile World Record, Boston, Mass.

Manager of Knitting Mill. Position wanted by a man 46 years of age, married, American. Has manufactured all classes of underwear on spring and latch needle, fleece lined, and is familiar with all kinds of knitting machinery. First-class references. 3646, Textile World Record, Boston, Mass.

COTTON CARDERS.

Overseer of Cotton Carding or second hand position in a good mill. Position wanted by a man, 42 years of age, English, married. Worked on all classes of cotton goods. Familiar with all kinds of cotton carding machinery. Good references. 3843, Textile World Record, Boston.

Overseer of Cotton Carding. Position wanted by a man, 33 years of age, American, married. Has worked on carded and combed hosiery yarn, colored yarns and warps. Familiar with American carding and combing machinery. Good references. 3864, Textile World Record, Boston.

Overseer of Cotton Carding or Supt. of Yarn Mill. Position wanted by a man 38 years of age, married, worked on all kinds of cotton goods and all the different American carding machinery, good reference. 3699, Textile World Record.

Overseer of Cotton Carding in a large mill or carder and spinner in a small mill. Position wanted by a man, 35 years of age, American, married. Worked on white and colored work, both fine and coarse numbers. Familiar with all kinds of carding machinery. Good reference. 3784, Textile World Record, Boston, Mass.

Overseer of Cotton Carding. Position wanted by a man, 37 years of age, Irish-American, married. Has worked on all kinds of cotton goods. Familiar with all kinds of cotton carding and picking machinery. Good reference. Could accept a position at one week's notice. 3805, Textile World Record, Boston, Mass.

Overseer of Carding and spinning. Position wanted by a man 36 years of age, married and American. Has worked on cassimeres, flannels, overcoatings, knickerbockers, blankets and carpet yarns. Is familiar with American and English cards and Davis & Furber and English mules. Good references. 3539, Textile World Record, Boston, Moss.

Overseer of Cotton Carding. Position wanted by a man 49 years of age, married, French American. Worked on coarse and fine cotton goods and all numbers on all makes of machinery. Good references. Will not go South. 3551, Textile World Record, Boston, Mass.

Overseer of Cotton Carding. Worked on plain and fancy, coarse and fine white goods. Wants only Rhode Island or Connecticut. 47 years of age; married. First-class references. 1884, Textile World Record.

Overseer of Cotton Carding. 40 years of age; married; worked on yarns, sheetings, ginghams, in some of the best mills in this country and good references from mills where employed. 3460, Textile World Record.

Overseer of Carding Department. Age 38; English; married. Plain and fancy goods; both combed and carded, Cotton Sea Island, Peruvian, Egyptian, Peeler, etc. Good references. 3196, Textile World Record.

Overseer of Carding. Position wanted by a man 30 years of age, American. Has worked on all kinds of wool, cotton and shoddy mixes, and is familiar with Davis & Furber, Lombard, Henderson, Platt and all kinds of condensers and feeds. Good references. 3658, Textile World Record, Boston, Mass.

Secondhand in Card Room, or Charge of Combs. Position wanted by a man 30 years of age, married, English. Has worked on all grades of American and Egyptian cotton and is familiar with all kinds of speeders, Whitin, Dobson & Barlow cards, combs and drawing frames. Good references. 3671, Textile World Record, Boston, Mass.

Overseer of Combing. Position wanted by a man 22 years of age, American. Has worked on all classes of medium and fine yarns, and is familiar with Asa Lee's and Whitin combs. Good references. 3664, Textile World Record, Boston, Mass.

Overseer of Carding. Has held all positions in picker and card rooms. White and colored goods, 8s to 40s. 3070, Textile World Record.

Overseer of Carding, or Second Hand in a large mill. Position wanted by a man 36 years of age, married, English, worked on all kinds of yarns—both plain and novelty, shirtings, sheetings and print. Familiar with Saco and Pettee cards and speeders, Lowell, Woonsocket frames, American and English carding machinery. 3696, Textile World Record.

COTTON SPINNERS.

Overseer Ring and Mule Spinning. Position wanted by a man, 45 years of age, married, English. Worked on all kinds of cotton, both fine, coarse from 1s to 200s. All kinds of cotton spinning machinery. Good references. 3850, Textile World Record, Boston.

Overseer of Mule and ring spinning. Position wanted by a man 35 years of age, married and American. Has worked on cotton yarns from 20s to 120s and is familiar with Parr, Asa Leis, Hetherington, Dobson & Barlow, and Mason new rope mules, and ring frames. Good references. 3516, Textile World Record, Boston, Mass.

Overseer of mule and ring spinning. Position wanted by a man 40 years of age; married; English. Has worked on all kinds and numbers of cotton yarn. Is familiar with all makes of mules. Good references. 3607, Textile World Record, Boston, Mass.

Overseer of Ring Spinning, spooling, long chain beaming, slashing and drawing-in. All kinds of fancies, sheetings, etc. $3.00 per day up. 3202, Textile World Record.

Overseer of Mule and Ring Spinning. Position wanted by a man, English, 35 years of age and married. Worked on hosiery, coarse and medium and fine yarns, more accustomed to medium yarns. Is graduate of a textile school and familiar with Parr & Platt mules, Mason mules and Whitin and Lowell frames. 3483, Textile World Record, Boston.

Overseer of Ring Spinning, spooling, warping and twisting. Position wanted by a man 29 years of age, married. Worked on coarse and fine white and colored work from 1s to 70s on Whitin, Lowell & Mason frames. Good references. 3500, Textile World Record, Boston, Mass.

Overseer of Spinning. Position wanted by a man 35 years of age. Has worked on all wool, wool and cotton and shoddy mixes. Is an experienced overseer and is familiar with English, Platt & Latham, Davis & Furber, Johnson & Bassett, Bridesburgh, Penn and Furbush mules. Good references. 3554, Textile World Record, Boston, Mass.

Overseer of Ring Spinning. Position wanted by a man 45 years of age, married. Worked on ginghams, sheetings, awnings, denims and all numbers of yarns, both fine and coarse, on Mason, Whitin, Fales & Jinks machines. Good references. 3018, Textile World Record, Boston, Mass.

COTTON WEAVERS.

Overseer of Cotton Weaving. Position wanted by a man, 46 years of age, English, married. Worked on fancy checks and stripes, fine lawns, spotted muslins, Bedford cords, fancy lenos, sateens, dress goods, heavy ducks and corset cloth. Familiar with Paul, Whitin, Crompton & Knowles, Stafford dobby looms. Good references. 3841, Textile World Record, Boston.

Overseer of Weaving or general second hand in a cotton mill. Position wanted by a man, 28 years of age, American, married. Worked on twills, sheetings, drills, sateens, etc. Familiar with Mason, Colvin, Whitin & Draper looms. Good references. 3848, Textile World Record, Boston.

Overseer of weaving, drawing in and twisting. Position wanted by a man 44 years of age; married; English. Has worked on plain twills, sateens, fancy lenos, Jacquard loppetts, also plush goods. Is familiar with Mason, Draper, Whitin and Crompton & Knowles looms. Good references. 3590, Textile World Record, Boston, Mass.

Overseer of silk and cotton weaving. Position wanted by a man 46 years of age; married; German. Has worked on fancy lenos, taffetas, satins, hard silk and skein dyed. Is familiar with all makes of looms. Good references. 3613, Textile World Record, Boston, Mass.

Overseer of Weaving. Worked on ginghams, sheetings, shirtings and dress goods. Familiar with Crompton & Knowles and Mason looms. First-class recommendations, 23 years of age. 3299, Textile World Record, Boston, Mass.

Overseer Cotton Weaving. Plain and a variety of fancies, lenos, etc. Good experience. A young man; English; married. 3147, Textile World Record.

MISCELLANEOUS.

Master Mechanic. Position wanted by a man 44 years of age; has had experience as master mechanic in cotton and knitting and all textile mills. Will not go west, or Canada. Could take a position at short notice. 3782, Textile World Record, Boston.

Second Hand in Cloth Room wants position as overseer or second hand; 20 years' experience on all kinds of goods; understands napping thoroughly; good references. 3048, Textile World Record.

Overseer of Dressing. Worked on all kinds of woolen and worsted men's wear and dress goods. First-class recommendations; 32 years of age; married. 3291, Textile World Record, Boston, Mass.

Overseer of Dressing. Position wanted by a man 26 years of age, married. Worked on fancy worsteds and woolens. Could take a position at short notice. Worked on D. & F. dressers and spoolers, Lowell Machine Co. slasher. First class reference. 3480, Textile World Record, Boston.

Boss Bleacher. Bags, shades, lawns, mercerized. Hollands, book cloth and table cloth. Prefers New York, New Jersey or Pennsylvania. 3083, Textile World Record.

Boss Dyer and Bleacher. Age 34; English; married. Yarns, warps, knit goods. Can give good references. Wants $4 or more. 3020, Textile World Record.

Dyer. Worked on all classes of goods, woolens, worsteds, yarn, piece dyes, slubbing, blue vats and cotton mixes. An American; married. 3085, Textile World Record.

Fancy Dyer. Aged 37; American; married. Cotton, wool and silk. 3158, Textile World Record.

Overseer of Spooling, warping, twisting, winding and dressing in a cotton mill. Position wanted by a man, 27 years of age, single, American. Has worked on all kinds of yarns, from 10s to 20s, white and colored. Familiar with all kinds of machines used in this department. Will go any place for a good position. Good reference. 3811, Textile World Record, Boston, Mass.

Dyer, Bleacher and Washer. Age 30; American; married. Cotton print goods in either the roll or garment, long and short hose, raw stock and yarn, aniline or oxidized black on hosiery. Good references. 3081, Textile World Record.

Boss Dresser wants position as overseer of dressing, spooling, winding and twisting, assistant designer or assistant superintendent. Age 33, Scotch, married; textile graduate; 18 years' of practical experience on all kinds of woolen and worsted fabrics for suitings, overcoatings and dress goods; first-class references. 3076, Textile World Record.

Overseer of Cotton Finishing or superintendent of bleach and dye works. Position wanted by a man, 42 years of age, American, married. Has worked on lawns, lenos, shirtings, sateens, flannels, in fact all kinds of cotton goods except back filled goods. Familiar with American and English machinery. Good references. 3852, Textile World Record, Boston.

Superintendent of Print Works, or Color Mixer, Printer, Bleacher and Mercerizer. Position wanted by a man 31 years of age, married, Scotch. Has worked on organdie lawns, shirtings, sateens, skirtings, etc. Is familiar with all kinds of drying starch manglers, etc. Rusden and Butterworth tenter machines, and all kinds of machinery used in print works. Good references. 3641, Textile World Record, Boston, Mass.

Overseer of Pressing and Folding of Underwear. Position wanted by a man 45 years of age, married, American. Is experienced on all kinds of underwear, men's flat and ribbed goods and men's and ladies' hosiery. First-class references. 3676, Textile World Record, Boston, Mass.

Overseer of Seaming. Position wanted by a man 27 years of age, married. Has worked on ladies' cotton hose and all grades of cotton underwear. Is familiar with Willcox & Gibbs, Hepworth, Campbell & Clute stitching, welting, looping, etc., machines. Good references. 3683, Textile World Record, Boston, Mass.

Foreman of cotton finishing room. Eight years' practical experience on napping machines, starching and calendering. Worked in mills in Italy and America. Married. 3155, Textile World Record.

MISCELLANEOUS.

Overseer of slashing, drawing in, spooling, warping and beaming. Position wanted by a man 46 years of age; married and American. Is experienced on colored and white work, and familiar with Saco & Pettee, Lowell, and Draper machinery. Good references. 3600, Textile World Record, Boston, Mass.

Boss Dyer, Mercerizer and Bleacher. Worked on wool yarns, cotton piece goods, and familiar with slubbing. 43 years of age, married, good references. 3097, Textile World Record.

Roller Coverer, or Overseer of Roller Covering. Position wanted by a man 28 years of age, married. Has had a wide experience on all kinds of rollers used in woolen or worsted mills. Is familiar with the different methods of roller covering. Good references. 3662, Textile World Record, Boston, Mass.

Overseer of Dressing. Position wanted by a man 38 years of age, American. Has worked on all kinds of worsteds and woolens, dress goods, etc. Is familiar with Davis & Furber. Good references. 3663, Textile World Record, Boston, Mass.

Overseer Cloth Loom. Worked on lenos, lawns, sateens, twills and most all kinds of cotton goods; 36 years of age; married. Will go any place for a good position. English. 3451, Textile World Record.

Overseer of Dyeing. Position wanted by a man 34 years of age, married, American. Has worked on raw stock, piece dyes, cotton warp, shoddy and silk noils, and all kinds of woolen goods. Is familiar with all kinds of dyeing machinery. Good references. 3672, Textile World Record, Boston, Mass.

Overseer of Dyeing, Bleaching, Mercerizing or Dyestuff Salesman. Position wanted by a man 45 years of age, married, English. Has worked on all kinds of woolen and cotton yarns and is familiar with all kinds of dyeing, bleaching and mercerizing machinery. First-class references. 3686, Textile World Record, Boston, Mass.

goods. Familiar with all kinds of machinery used

Overseer of Beaming, Spooling and Quilling. Position wanted by a man 40 years of age, married, an American. Worked on all kinds of cotton in a beaming department. Good references. 3688, Textile World Record, Boston, Mass.

Overseer of Dyeing. Position wanted by a man, Swedish, 35 years of age, married. Has worked on worsted yarns, raw stock, wool and all kinds of cotton raw stock, piece dyeing, union dyeing and warp dyeing and sizing. 3491, Textile World Record, Boston.

Overseer of Weaving. Worked on sheetings, twills, sateens and fancies. Wants not less than $18 per week. 3157, Textile World Record.

Overseer of Cotton Bleaching, Singeing or Gray Room. Position wanted by a man, 26 years of age, English, married. Has worked on all kinds of cotton piece goods, familiar with all kinds of machines used in the handling of these goods. First-class reference. 3766, Textile World Record, Boston.

Designer in a Cotton Mill. Position wanted by a man, 33 years of age, English; has worked on ladies' dress goods, shirtings, ginghams, lenos and jacquard patterns. Will not go west, south or Canada. Good reference. 3780, Textile World Record, Boston.

Second Hand over Warping and spooling in a cotton mill. Position wanted by a man, 60 years of age, widower; worked on tickings, awnings, shirtings, flannels, sail cloths, prints, etc. Will not go south. Good reference. 3778, Textile World Record, Boston.

Wanted: Situation as office manager or bookkeeper by a capable man of long experience. Can take entire charge, or will accept any position paying a fair salary if in line of advancement. Good references. 3521, Textile World Record.

Bookkeeper in woolen, worsted or yarn mill. Position wanted by an American, 33 years of age, married. Has the best of references. 3477, Textile World Record, Boston.

Foreman for Aniline Black Department, all silks, cotton, black and taffeta umbrella goods. Age 32; English; married; first-class references. 3238 Textile World Record.

ARE YOUR MILLS GROWING?

The question of expansion to meet the growing demands of trade is becoming a serious problem with many manufacturers, and those in this position find that much depends upon the plant having been laid out with an eye to future growth.

Now one of the vital points in a manufacturing establishment is the power plant and its adaptability to increased demands affects largely the question of growth for the whole factory.

Write for prices on "PLYMOUTH" Manila and Sisal baling rope.

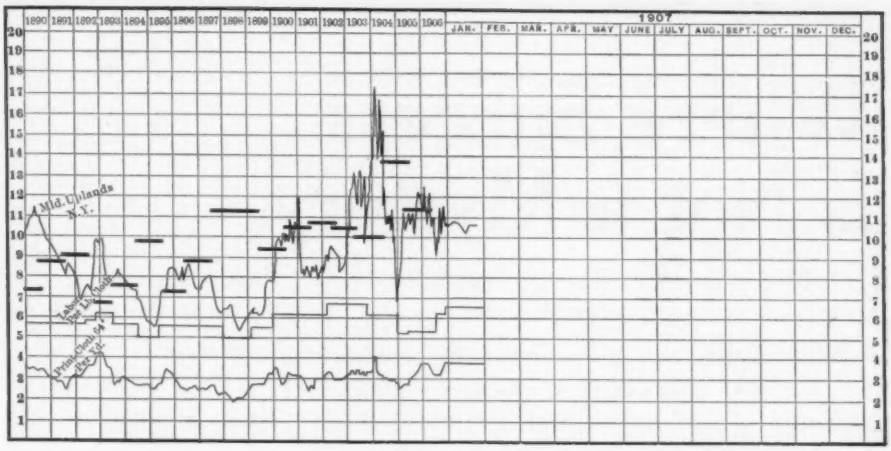
The matter of installing power equipment intended to meet the requirements of future growth of the business has been greatly simplified by the use of rope drives as a means of distributing power.

Our book on "Rope Driving" goes into the whys and wherefores of this proposition and also describes the many other advantages of rope transmission. Sent free to power plant owners.

Plymouth Cordage Co.

ESTABLISHED 1824

North Plymouth Mass., U. S. A.



The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.
CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

Cotton Market.

The crop is too heavy for the speculators to grapple with. The demand from the mills was never larger, but the receipts from the South have been so large as to scare off even the most daring bull. The cotton coming in sight from September 1 to Jan. 25 for a series of years is estimated by the "Chronicle" as follows:

1901-02	7,875,563
1902-03	7,912,521
1903-04	7,922,794
1904-05	8,683,252
1905-06	7,706,040
1906-07	9,373,610

The rate at which cotton is sent to the seaboard varies widely from year to year. In 1904, 78 per cent. came in sight by January 25, while at the corresponding date of the following year only 65 per cent. had made its appearance. For this reason the in-sight movement in any one year cannot be taken as an indication of the size of the crop. A somewhat better guide is afforded by the ginning report, which gave 12,167,873 bales ginned to January 16, as compared with 9,989,634 bales to corresponding date last year and 12,767,600 bales two years ago when the total crop was nearly 14,000,000 bales. The trade is disposed to put the present crop at 13,000,000 bales. The strength of the demand is indicated by the fact that in the face of this prospect of 13,000,000 bales middling uplands is firm around 11 cents a pound. The agitation against the business methods of the New York Cotton Exchange has done much to restrict speculation and prices have been mainly governed by the ordinary supply from the South and by the demand from the mills.

*Massachusetts, Blackstone. The Blackstone Manufacturing Co., reported to make additions to the plant, advises us that they are only filling vacant floor space and are putting in 152 Northrop looms and 7,168 Draper spindles.

Massachusetts, Fall River. The Chace Mills have increased the capital stock from $900,000 to $1,200,000.

North Carolina, Long Island. The Long Island Cotton Mills have purchased property along the Catawba River which it is presumed will be developed for power. New machinery has been recently installed in the plant. It is thought that another new mill is in contemplation.

WONALANCET COMPANY
NASHUA JUNCTION, N. H.
Manufacturers of a superior grade of
CARDED COTTON
Gulf and Peruvian—in the white
To Meet the Most Exacting Needs of
WOOLEN MILLS

WEIMAR BROS. MANUFACTURERS OF **Cotton Mercerized Tapes,**
SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.
Phone Connections. Works, 2046-48 Amber Street, PHILADELPHIA, PA.

Where Success Is Not a Mystery

Those intangible somethings called "Fate," "Luck," etc., to which is often ascribed success or failure, have no place in a modern mill.

Certain supplies or methods, applied with a reasonable amount of judgment, will repeat success time after time, as surely as others repeat failure. With

Wyandotte Textile Soda

bright, soft, lofty wool and cloth is the rule, not the exception. But the use of pure alkali, soda ash, sal soda, etc., for scouring and fulling, leaves the wool and cloth weakened in its natural properties, harsh and lifeless.

Wyandotte Textile Soda has no equal as a wool and cloth scourer and fuller, soap builder, acid neutralizer and as an assistant in the brightening and setting of colors.

None Genuine except with a card bearing this Trade Mark

In Every Package.

That Wyandotte Textile Soda should possess such properties is but natural. In the manufacture of this article every step is taken with knowledge and reason so that the results which it enables the mill man to get are the cause of no surprise.

To these facts is due its success. If you are not using this soda, we ask you to begin this New Year by giving it a trial, knowing it will prove to be all we claim for it.

Order from your supply house.

The J. B. Ford Co., Sole Mfrs, Wyandotte, Mich.

THIS SODA HAS BEEN AWARDED THE HIGHEST PRIZE WHEREVER EXHIBITED.

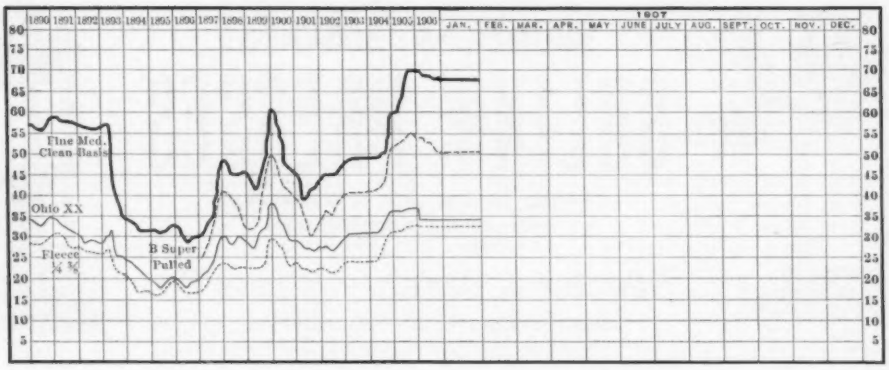


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

Wool Market.

The near approach of the new clip brings about the usual dullness in the wool trade. Eastern traders, being good merchants, are suddenly losing interest in wool, and will probably not regain their enthusiasm until the growers have begun to feel the full weight of the new clip. These tactics may not succeed to the same extent as in previous years because the wool growers are not only stronger financially, but are organizing to present a solid front to what they call the "eastern wool combine."

While business is good with the mills, purchases have been light and there has been no disposition to increase stocks beyond what is required to cover present orders for goods. All the factors in the situation are working to bring about a period of dullness. Prices, however, are firm and there is no indication that owners of wool are uneasy. The unparalleled prosperity of the country, and the strong statistical position of wool reduce the chances of a material decline to the vanishing point.

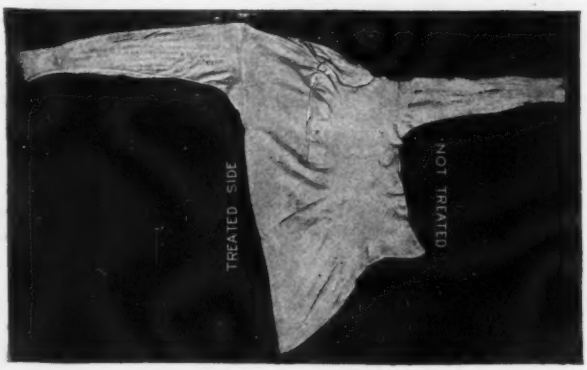
Maine, Houlton. New machinery is to be installed in the Houlton Woolen Mill, greatly increasing the capacity.

Massachusetts, Lawrence. Rutter Bros. are installing in their woolen mill a new weaving plant for manufacturing men's wear and carriage cloth. The additional looms will be running in about 10 days. J. R. Milson, 620 Atlantic Ave., Boston, will be their selling agent.

Massachusetts, North Adams. A number of new looms are being installed in Strong, Hewatt & Co.'s mill.

Vermont, North Pownal. The North Pownal Mfg. Co. has completed installation of an electric light plant in the mill.

TRADE IS DEMANDING NON-SHRINKABLE WOOL



BECAUSE THE

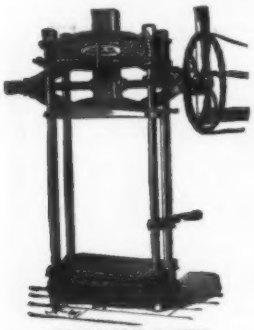
FORWOOL Never-shrink Registered

IS WORKING A REVOLUTION

GET IN LINE

For information write

CHARLES H. HEYER
REAL ESTATE TRUST BUILDING
PHILADELPHIA, PA.



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BOOMER & BOSCHERT

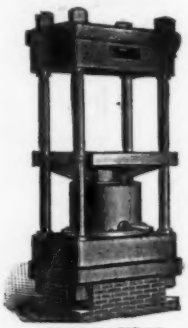
BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

Boomer & Boschert Press Co.

338 West Water S., SYRACUSE, N. Y.
Southern Agent, A. H. WASHBURN, Charlotte, N. C.



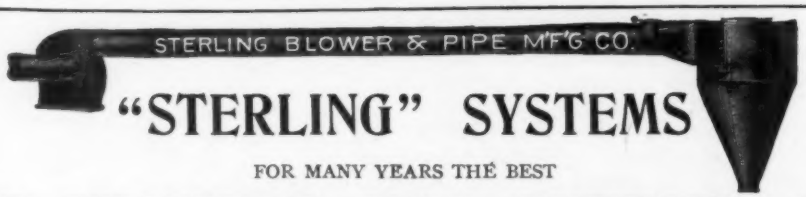
HYDRAULIC.

Handles heavy cases in a Time-Saving Way—The Economy Steel Tiering Machine

Goods are put in place with ease and economy. The largest amount of stock can be stored in the smallest possible space and yet be instantly accessible. In use in representative mills. Investigate its merits and 'twill be in use in yours. Write for prices.

Economy Engineering Co.

58-64 N. Jefferson St.
Chicago, Ill.



"STERLING" SYSTEMS

FOR MANY YEARS THE BEST

DUST COLLECTING, WOOL CONVEYING, ETC.

STERLING BLOWER & PIPE MFG. CO.

Write for "1906" Catalog.

HARTFORD, CONN., 1027 Huyshope Ave. New York Office, 136 Liberty St.

A Rigid Examination Reveals No Defects in the

CROSBY SPRING-SAVE GLOBE AND ANGLE VALVE.

NO BETTER VALVE CAN BE MADE.

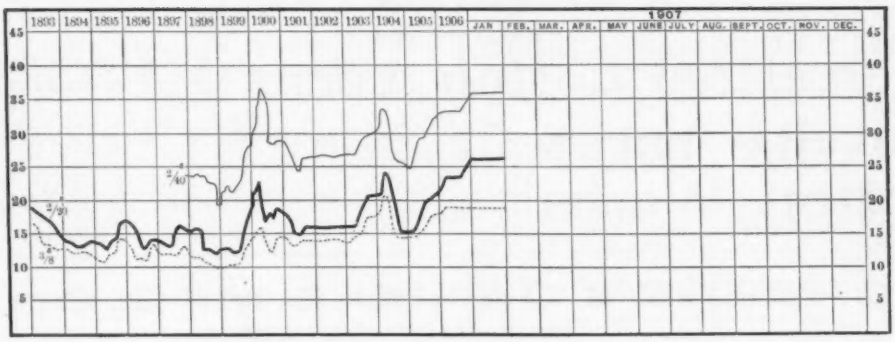
All Working Parts Renewable Without Removal from Piping. ALL PARTS INTERCHANGEABLE. THEY have a full opening through them. WHEN COMPLETED ARE TESTED under more than 400 lbs. pressure. We guarantee them NOT TO LEAK AT HIGH PRESSURES. MADE IN BRASS AND IRON in the various styles furnished to the trade. Try One or More Valves and BE CONVINCED.

CROSBY STEAM GAGE AND VALVE CO.

Stores: BOSTON, NEW YORK, CHICAGO, LONDON.

Office and Works: BOSTON, MASS.

Yarn Department.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Cotton Yarn Market.

Business is good. Weavers and knitters are seeking the yarn spinners and dealers. Deliveries are proceeding in large volume on old contracts and there is a strong reluctance on the part of the spinners to book orders for late delivery. This is due largely to the conviction that the raw material may go higher and cannot go materially lower than present prices. The mills are booked ahead for months. Fine yarns are especially strong and orders are booked as if the spinner was granting the buyer a favor, as in fact he is. With the general business of the country in its present state there is no reason for expecting a decline in the cotton yarn market. Even if cotton should run off it is not likely that yarn would follow to anywhere near the same extent, owing to the limited production of the spinning mills. We quote as follows:

Eastern Cops.

6s	20½
8s	20¾
10s	21¼
14s	22¼
16s	22¾
18s	23¼
20s	23¾
22s	24¼
24s	25¼
26s	26¼
30s	27¼
34s	28½
36s	29½
40s	33

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12s	23
14s	23½
18s	25½
20s	26½
24s	29
26s	31
30s	34
36s	39
40s	45
45s	48
50s	55
55s	59
60s	62

Eastern Two-Ply Warps, Carded Peeler.

2/30s	36
2/36s	39
2/40s	46
2/45s	49
2/50s	56
2/60s	63

Egyptian Weaving Yarns.
Single Skeins Combed.

30s	41
36s	43
40s	46
45s	50
50s	54
50s	55
55s	60
60s	65
70s	70

Philadelphia Market.

Business has continued good since the first of the year and the demand for yarn has kept prices firm; there has been no evidence of weaknesss on the part of any spinners. The market on cotton, for good grades, has held very firm, and from all reports one is forced to believe that this cotton is being absorbed rapidly by exporters and spinners. Spinners are so well supplied with orders

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps.

DYE SULPHUR BLACKS DIRECT IN COPS, CONES OR TUBES.

Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

M. J. TOOHEY & CO., OF FALL RIVER, MASS.

Banding made from Egyptian or White Cotton Yarn as Desired.

The Other Fellows Banding.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

COTTON WARPS

HOUSATONIC, MASS. 4s to 60s.

Dana Warp Mills

WESTBROOK, ... MAINE

White and Colored Warps 6s to 50s Single and Ply

Mule Cops From 30s to 50s from American & Egyptian Cotton

that we do not see any reason for any weakening in prices in the near future.

The damage done to the cotton crop during the fall by storm and bad weather is beginning to be reflected very strongly in yarns that are now being made. Spinners are unable to maintain the average quality that they have made in former years. The cotton obtainable is darker in color and not so clean as other years.

Prices quoted are for delivery commencing in six weeks to two months.

Southern frame spun cones:—

7s and coarser	20
8s and 9s	20
10s	20½
12s	21
14s	22
16s	22½
18s	23½
20s	24-24½
22s	25-25½
24s	26-27
26s	28
30s	30-31
40s	40
50s	50

Southern high grade mule yarn:—
Cones.

10s	22
12s	22½
14s	23-23½
16s	24-24½
18s	24½-25
20s and 22s	25½-26½
24s	27½

Southern frame yarn, lower grades:—

6s and 8s	19¾
10s	20

Eastern cones (high grade quality):—

10s	23
12s	23½
14s	24
16s	24¾
18s	25½
20s and 22s	26½-27½

Skein yarn (mostly Southern):—

4s and 8s soft	19½
10s to 12s	20-20½
14s to 20s	21-23
22s	23½
14/2	21½-22
16/2	22½-23
20/2	25½-26
30/2	32
40/2	43
16/3 slack	22
12/3 slack	21
8/3 carpet	19½
8/3 slack	19½
9/4 slack	19½

JAMES E. MITCHELL CO., COMMISSION MERCHANTS.
Cotton Yarns
AND COTTON CLOTHS.
122-124 Chestnut Street, PHILADELPHIA, PA.
73 Leonard Street, NEW YORK.
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CATLIN & CO.,
Cotton Yarns
345 Broadway, NEW YORK.
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605 Medinah Temple, CHICAGO.

Harding, Whitman & Co.,
Dry Goods Commission Merchants,
COTTON AND WORSTED YARNS.
BOSTON. NEW YORK. PHILA.
CHICAGO. BALTIMORE. ST. LOUIS.

A. D. Salkeld & Bro.
COMMISSION MERCHANTS
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COTTON YARNS
66-72 LEONARD STREET - - NEW YORK

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TOLAR & HART
Cotton Yarns and Cotton
TEXTILE BUILDING
Members of New York Cotton Exchange
66-72 LEONARD ST. NEW YORK

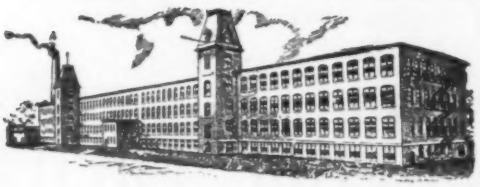
Fred Sternberg & Co.
530 Broadway, - NEW YORK.
MERCERIZED TURKEY RED GASSED } COTTON YARNS.

E. D. LORIMER & CO.
COTTON YARNS } ALL NUMBERS
MERCERIZED YARNS } FOR ALL PURPOSES
346 BROADWAY, NEW YORK.

LUDWIG LITTAUER,
Successor to MOELLER & LITTAUER.
SILK, WORSTED, WOOLEN YARNS COTTON AND MOHAIR
Polished Threads and Tinsel. Artificial or Wood Silk.
Mercerized, Turkey Red, Fine Gassed Yarns.
109 GREENE ST., NEW YORK.

C. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS



Fitchburg, Mass.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cottons, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

JENCKES SPINNING CO.

Main Office and Mills at Pawtucket, Rhode Island.

Carded and Combed Cotton Yarns for Weavers and Knitters.

Double and Twist Yarns for Woolen Trade.

Philadelphia Office, Mariner and Merchant Building, Third and Chestnut Streets.

GRANT YARN CO.,

COMBED AND CARDED COTTON.

YARNS 40's and above. AND

FITCHBURG, MASS. WARPS

Ballou Yarn Co.

PROVIDENCE. R. I.

Harness and Seine Twines and other Job Gassing, Winding, etc. All Numbers

GASSED YARN SPECIALTIES

C. MOORE & CO.,

Manufacturers of

TWINES, THREADS AND YARNS

Jacquard Harness Twines of all kinds on hand and made to order.

S. W. Cor. Fifth and Market Sts., Phila.

Wm. Chalmers & Co.

(Incorporated)

Imported and Domestic Cotton Yarns.

Turkey Red Yarns a specialty.

Correspondence solicited.

43 Leonard St. - - NEW YORK.

Reels for Cotton WOOLEN AND WORSTED

Patented Hosiery Winders, Cop Winders and Spoolers.

LINDSAY, HYDE & CO.,

2124 to 2130 East York St., PHILADELPHIA, PA.

Wiscasset Mills Co. | Patterson Manfg. Co.
Efrid Manfg. Co. | Tuscorora Cotton Mill.

HIGH GRADE HOSIERY YARN

White and Colors. All Numbers.

Sewing Twines on Cones and Tubes.

SPECIALTIES IN WEAVING YARN.

Black and white. Double and twist for woolen trade.

CANNON MILLS, 55 Leonard St New York.

THE RAVINE MILLS CO.

MANUFACTURERS OF

COTTON WARPS

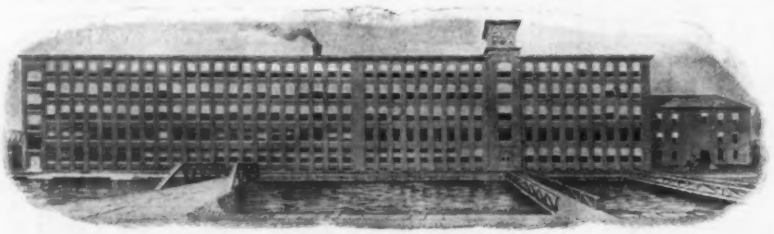
In White and Colors on Beams and Jackspools

Specialty of Fast Black Twist on Jackspools.

VERNON, CONN.

Indian Orchard Company

Indian Orchard Mass.



E. Morgan, Pres.
H. K. Wight, Treas.
W. C. Godfrey, Ag't.

Carded and Colored Cotton, For Mixing with wool, Machined or in Roving.

Cotton Warps and Yarns, In Gray and all colors, single or two or more Ply, and Cable Cord.

Novelty Yarns In various Patterns Colors and Twists.

Warps (Southern):—

10s to 12s	20½-21
14s	21½
16s	22-22½
20s to 22s	23½-24
26s	27
14/2	23
16/2	24
20/2	26-27
24/2	29
30/2	33
40/2	44

Mixed colored yarns (mock twist, half colors):—

6s to 10s	20½-22
12s to 14s	22½-23
16s to 18s	24-25

Mock Egyptian, 2c. advance over white.

Egyptian, 7 to 8c. above best quality white.

Worsted Yarn.

The worsted yarn situation is one of great promise and the spinners have the business of the coming year well in hand. All the yarn being delivered at the present time is for the end of the light weight orders. All the spinners have much business booked for the coming heavy weight season, but few deliveries are being made and in almost all instances spinning particulars are being withheld until the weavers know for a certainty just what size is to be demanded for the styles being offered.

The heavy weights are opening slowly; all the samples for the piece dyes and the cheaper class of fabrics, such as cotton worsteds, have been opened up. The cotton worsteds are not selling so well as usual and the American Woolen Co. have reduced the price on this class of fabrics 5 cents a yard below last year's quotations. The consequence is that the smaller mills which maintained old prices have not sold up more than one-third of their production, where last year and last season they sold up quickly. The fancy worsteds will be opened up the first week in February.

The trend of business is towards new fabrics and a better grade of cloth, as is shown by the way the cheaper qualities have sold during the last two weeks. Some of the commission houses say that the light has been so bad buyers were disinclined to trust their judgment until they could see better what they were buying. The weavers who make

Established 1863 *Incorporated 1893*

W. Warren Thread Works

Makers of High Grade

SPOOL COTTON

of every description for the manufacturing trades

Mills: Westfield, Mass.

LINEN YARN IMPORTER.

HUGHES FAWCETT, 115 Franklin Street, NEW YORK.

Flax, Hemp and Jute Line and Tow Yarns,
For Weaving Purposes.
Linen Jacquard Harness Twines,
Fine Cotton Harness and Heddle Twines,
For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished.

Mercerized and Plain
Skein, Warps, Cones, Cops, Tubes
COTTON YARNS
426 and 428 Market St., Phila.
Theo. H. Strouse & Co.

Box Shook
and
Lumber
THE CONNECTICUT BOX CO.
New Haven, Conn.

FRANK A. TIERNEY,
206 West Broadway, New York, N. Y.
WOOL, SILK, MOHAIR, CAMEL HAIR, RAMIE.
Ramie Tops, Ramie Noils, Silk Tops, Silk Noils, Ramie Yarns, Silk Yarns, Silk Noil Yarns.
Prepared Tussah Silk for Woolen Manufacturers, ready for immediate use on regular woolen machinery.

G. J. MERWIN, Prest. and Gen'l Mgr. **FREDERICK A. BETTS, Sec'y and Treas.**
The Merwin Paper Company
Hartford, Conn.
Press Papers and Fender Boards
Correspondence Solicited
Mills at Rainbow, Conn. **Address Inquiries to Rainbow, Conn.**

Pocasset Worsted Company,

WORSTED YARNS

IN THE GRAY.

Mills at
Thornton, R. I.

Office
100 Boylston St., Boston, Mass.

French System. Bradford System.

B. F. BOYER CO.,

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

Office and Mill, River Ave. and Marlton St. CAMDEN, N. J.

Woolen and Merino YARNS

Eaton Rapids Woolen Mills,

EATON RAPIDS, MICH.

EDDY & STREET,

Cotton, Woolen

Yarns and Braids

Worsted, Spun Silk.

PROVIDENCE, R. I.

WORSTED YARNS

RICHARD CAMPION.

SELLING AGENT FOR

Bristol Worsted Mills,
Highland Worsted Mills.

300 Chestnut Street,
PHILADELPHIA, PA.

THE MALCOLM MILLS CO.,

MANUFACTURERS OF

FANCY YARNS and POLISHED THREADS.

Offices: 229 Chestnut St., Philadelphia.

Mills: Frankford, Pa.

KROUT & FITE MANUFACTURING CO.,

Manufacturers of

Silk, Cotton and Mercerized Narrow Fabrics

Spool Tapes a Specialty.

Telephone Connection. Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA.

YARNS Solis, Boston.

77

SUMMER STREET.

ANDREW J. SOLIS, Jr. & CO.

HOFFMAN, DeWITT & McDONOUGH CO.,

Diamond Stay Bindings

TRADE MARK

Manufacturers of

Tapes, Webbing and Bindings.

COTTMAN and G STS., PHILADELPHIA

Ryer's Station, P. & R. R. R.
Bell Telephone, 203 Cheltenham.

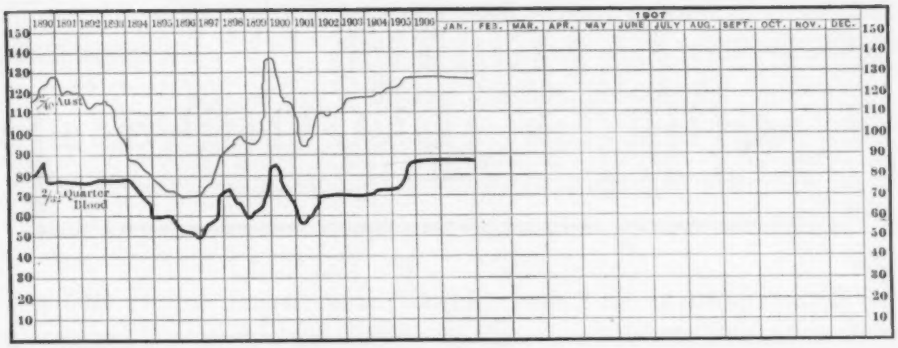


CHART SHOWING RANGES OF PRICE OF WORSTED YARNS.

a proper price on their styles will never catch up with the business which will be secured during February and March. Not much concession will have to be made as the prices were established last year, and buyers naturally will not place all their eggs in one basket, notwithstanding the inducements to secure business made by the trust. Then again mills that were in a position to make grey mixes, so much called for during the light weight season, have no longer the advantage over the weavers who were unable to get mixes fast enough from the spinners. The heavy weights do not call for mixes, but straight yarn largely in 2/16s to 2/20s and the result will be a business more evenly distributed. The grey mix demand affected the business very curiously. Some spinners were running their mills day and night on these yarns. Other spinners not fitted up for this work could get no orders and it even extended to the top makers, who could not understand why there were no orders for tops forthcoming.

The weavers when asked for increased spinning orders state that by the middle of February the orders will be given, as at that time they will know just where they stand and none of them care to use the yarn purchased for heavy weight orders in the light weight run out. It is pointed out by the spinners that many more orders have been booked for the heavy weight business than can well be filled. Some of the weavers have gone as far as to have special understandings with spinners that their orders are to have preference in deliveries.

Many weavers feel very comfortable from the fact that they have already covered themselves for the yarn out of which to make the heavy weight cloth, but if indications fail not the demand for yarn will later be so great that notwithstanding the fact that orders are on the books of spinners, it will be a physical impossibility for the spinners to get orders out on time and especially at the beginning of the rush for yarn. The weavers all expect one of the best heavy weight seasons for medium and fine fancy worsteds and good grades of mercerized cloth in years. The only mixes to be used this season will be a few brown mixes, and the demand will be largely for 2/16s to 2/20s for fancy and 12s to 18s for mercerized cloth. The business for the 12s will be determined as the season progresses.

The hosiery knitters are using a percentage yarn to get prices within the proper range for their customers. The knitters of fine underwear have already contracted largely for their business and deliveries for these yarns are now being made. Prices are well maintained and it is impossible to understand where they can be lowered with wool at its present standard of value. The outlook is encouraging, but as is always the case at the beginning of the season, buyers do not always give orders as early as anticipated.

We quote:

2/40s Australian	1.28
2/40s Delaine	1.23
2/36s 1/4 to 3/8 Blood	95 to 1.00
2/32s 1/4 Blood	85-87½
2/20s 1/4 Blood	82-85

Woolen Yarn.

Spinners are beginning to secure some good orders from various directions and without doubt inside of sixty days all of them will be well employed. Some already are arranging to run night and day on yarn out of which to make the fancy plaid dress goods now in such demand. This demand will probably increase until the greater part of the business will be turned on this fabric. We note also some demand from the weavers of men's wear for woolen spun yarn to use in connection with worsted yarn to cheapen the cost of the worsted fabrics.

Many of the hosiery knitters, believing that now

CHENEY BROTHERS

Silk Manufacturers. So. Manchester, Conn.

Trams, Organzine and Spun Silks in the hank, or on spools and cones for woolen manufacturers.

Silks for electrical uses, insulation and special purposes made to order.

Knitting Silks, Ribbons and Piece Goods for Trimming Knit Goods.

Dress Silks, Satins, Linings, Printed Pongees, Foulards and Decorative Silks; Upholstery Goods, Ribbons, Sashes, Plushes and Velvets.

WILLIAM RYLE & CO.,

Foreign and Domestic

Spun Silk Yarns and Noils.

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., NEW YORK.

SAUQUOIT SILK MFG. CO.,

INSULATING AND BRAIDING SILKS.

ORGANZINE, TRAM & HOSIERY SILKS.

Fast Dye Organzines for Woolen Manufacturers a Specialty.

Mills: Bethlehem, Pa., Phila., Pa., Scranton, Pa. New York Representatives, Wm. Ryle & Co., 54 Howard St.—Phila. Office, 4015 Clarissa St., Nicetown.—Chicago Office, 210 Monroe St.—Boston Office, 78 Chauncy St.

Crochet Lace Edgings

Spun Silk, Splicing Yarn, Mercerized Yarns, Cotton Warps, Sewing Threads, Tapes, Braids, Domets, Cambrics, Silesias.

Write for Prices and Samples.

George W. Chapin, 229-231 Church St., Philadelphia.

NON-FLUID OILS

THE BEST ECONOMY IS TO USE THE BEST.

This is true of many things, but especially true of textile machinery lubricants. The best lubricant saves hundreds of times its value in coal, repair bills, accidents and delays. **Non-Fluid Oils** represent a distinct advance over fluid oils and greases.

They do not drip like oils; do not waste power like greases. Better than fluid oils; better than greases.

It will pay you to investigate them.

Write us for free samples, descriptive literature and prices.

Originators and Sole Manufacturers of Non-Fluid Oils.

The New York & New Jersey Lubricant Co., Dept. H, 14-16 Church St., New York City.

is the proper time to buy yarn, are placing orders earlier than for some years. In some lines of hosiery the high price of yarn has caused them to sell products at near cost and it is in an endeavor to purchase yarn low enough to make a profitable business that hosiery knitters are operating on a slack market ahead of their usual purchasing time. Of course there are some knitters who think that they have plenty of time to purchase and will wait sixty days before coming on the market.

A great deal of cotton is being used in all kinds of knitted fabrics and as far as hosiery is concerned most of the yarn used is at least 50 per cent. cotton. It is noticed that the better grades of fabrics and underwear are having the best sale. The cheaper grades are not called for. Knitters making underwear state that they expect to use twice as much yarn made from Australian lambs' wool than they have ever used before.

Some of the knitters notified their customers that they would fill initial orders at prices given, but that they would not agree to sell duplicates at first price. The result has been that the knitters have sold all kinds of orders; some have taken two or three times as much as they would ordinarily take, but those who did not so do are paying 25 to 50 cents a dozen advance.

The wool sales in Australia which the spinners and knitters are watching so carefully have shown great strength and importers of Australian lambs' wool will be unable to sell for less than from 78 to 81 cents a pound, but notwithstanding this slight advance knitters are anxious to get hold of the wool as Boston has been short of this article for at least three months. The new arrivals will not reach here before March 1 and the wool will be ready for sale by March 15.

Many of the woolen yarn spinners have been without much business for the last two months, but the outlook has improved and before long all the mills will be running full. Some are already running day and night,—largely on a new line of business, and later if the old customers want yarn —there will be a great shortage of available machinery. It is predicted that the coming year will be a "hummer" for business and those who get in first will get the most trade.

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Secy.

Established 1860—Incorporated 1893.

THE S. BLAISDELL, JR., CO.,

COTTON, EGYPTIAN PERUVIAN

American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

WILLIAM B. CHARLES,

Cotton Yarns,
Cotton Cloth,
Silesia, Sateens,

For the Underwear Trade.

AMSTERDAM, N. Y.

Boston Office, 200 Summer St.

JOSEPH M. ADAMS CO.

WOOLEN YARNS,

Carpet Backing and Rug Yarns a Specialty.

ARCOLA MILLS,

Main St., foot of Centre St., Manayunk, Philadelphia.

Knitting and Weaving

YARNS.

Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

EDWARD S. HYDE,

226 CHESTNUT STREET,

Philadelphia, Pa.

Official American Textile Directory.

The TEXTILE WORLD RECORD, which for years has compiled and published the ANNUAL OFFICIAL DIRECTORY OF THE TEXTILE INDUSTRIES, recently bought the AMERICAN TEXTILE DIRECTORY, and merged the two Directories, retaining the special features of each, and with the combined subscription and sales list of both.

The OFFICIAL AMERICAN TEXTILE DIRECTORY is now published in two editions, viz.: the Office Edition, price, $3.00, and the Travelers' Edition, smaller in size, with thin paper and flexible binding, price, $2.00. The contents of each is the same.

The combination price for the TEXTILE WORLD RECORD and DIRECTORY is $3.00 per year with the Travelers' Edition, and $4.00 per year with the Office Edition.

The 1906-7 Edition is ready for prompt delivery.

CONTENTS.

A COMPLETE DIRECTORY OF MILLS including Cotton, Woolen, Knitting, Silk, Flax and Jute Mills of the United States, Canada and Mexico, together with the Dyeing and Finishing Works, Bleacheries, Print Works and other Textile Establishments.

Full information is given about each mill in almost every instance, viz.: the name of the company or firm, names of officers, agent, superintendent, the character of goods made, the machinery equipment, i. e., the number of sets of cards (or combs), the number of spindles, number of looms; whether the mill uses steam or water power, whether there is a dye house or not, the names of the selling agents or if the mill sells direct, and in many instances the name of the man is given who buys the raw material and supplies. In this section of the Directory, all the mills in one place are arranged under the head of that town, but so designated that the kind of a mill is determined at a glance by boldface letters, so that a person looking, for instance, only for woolen mills, can pick them out at a glance. This system of arrangement is conceded to be the most convenient of any, as it groups all the mills in one town together and is self-indexing, while at the same time those interested in a particular class of mills, such as cotton, silk or knit, can find them as easily as if they were classified separately.

THE MAP FEATURE was originated by the Textile World in 1894, and is copyrighted. There are 19 of these textile maps, which show only the cities and towns where there are textile establishments.

AN ALPHABETICAL INDEX to the textile establishments in the United States.

MILLS WITH WORSTED MACHINERY. A separate list is compiled of mills with worsted machinery for the convenience of those dealing exclusively with that branch. This is a feature unique in this Directory.

THE YARN TRADE INDEX. In this department are classified lists of manufacturers of different kinds of yarn who spin for the market. It gives the size of yarn spun and the form in which the yarn is put up, together with the selling agents of the mills, or, if sell direct.

THE TEXTILE MILLS IN MEXICO. This feature of the American Textile Directory is continued and brought up to date by the latest information.

COMMISSION AND ORDER SECTION. In this department are classified lists of establishments doing dyeing, bleaching, printing, finishing, and mercerizing on order, sub-divided according to the class of work done.

RAW MATERIAL SECTION. In this department are complete lists of dealers and brokers in wool, cotton shoddy and extracts, and wholesale rag dealers.

SELLING AGENTS AND DRY GOODS COMMISSION HOUSES in the principal cities of the United States, giving the character of goods handled

MANUFACTURING CLOTHIERS in the principal cities, buying from first hands, giving the class of goods made and in most instances the name of the buyer.

SUIT AND CLOAK MANUFACTURERS in the principal cities, buying from first hands, giving the class of goods made and in most instances the name of the buyer.

MACHINERY AND SUPPLY SECTION. This contains a carefully classified index of over seven hundred builders of textile machinery and dealers in mill supplies

LORD & NAGLE COMPANY,

PUBLICATION OFFICE, . . . 144 CONGRESS STREET, BOSTON

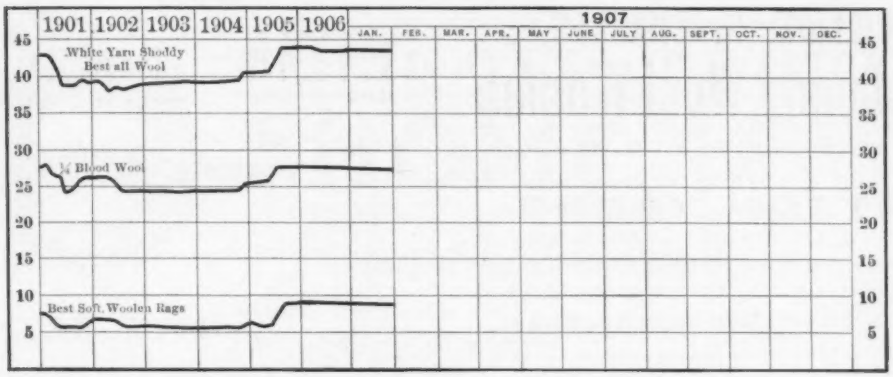


CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

Rag and Shoddy Market.

This market has continued in the even tenor of its way. There has been no strengthening of the demand and buyers have limited their purchases of both rags and shoddy to immediate wants. A large amount of shoddy is used even at a time like the present when the demand is for the worsted finish which can be obtained best by the use of pure wool or cotton. Those manufacturers who are using shoddy find it easy to supply their wants in a market that is well supplied with nearly every grade. The close of the heavy weight season adds another depressing element to a market already dull. Prices, however, are steady. Dealers know well that shading prices would not stimulate business. The mills are buying stock as they need it, and would not buy otherwise, even if prices were cut.

SHODDIES AND EXTRACTS.

White yarn, best all wool	44-47
White knit, all wool, best fine	35-40
White knit, No. 2	30-35
Light yarn, extra fine	30-35
New pure indigo blue	28-30

Merino.

Fine light, all wool	24-27
Medium light, all wool	15-17
Fine black, all wool	25-27
Fine dark, all wool, best grade	22-25
Medium dark, all wool, No. 1	18-20
Medium dark, all wool, No. 2	15-16
Red knit stock, strictly all wool	20-22
Red flannel, all wool	20-22
Dark blue for hosiery, strictly all wool, No. 1	20-22
Dark blue for hosiery, not all wool, No. 2	15-18

WOOLEN RAGS.

Fine merchant tailors	10-11
Choice light colors	13-15
Browns	12-13
Blacks	9-10
Fine blues, plain	9-10
Fine dark	12-13
Medium dark	7-8

Worsteds.

Blue	15-17
Black	21-22

Serges.

New black	16-18
New blue	14-16

Flannels.

New scarlet	19-20
New blue	15-16
Cloakings	3-4

SOFTS AND KNIT STOCK.

Soft woolens, best	9-10
Old white flannels	23-24
White flannels, No. 2	11-12
Old red flannels	13½-14
Light blue flannels	7½-8½
Old blue flannels	9½-10
Old plaids	7-8½
White stockings	24-25
White hood stock	24-25
Clear hoods	9-10
Blue stockings	8½-9½
Fancy stockings, No. 1	9½-11
Gray stockings	10½-11
Black stockings	11-12
Knit stock comforters	7-8
Red knit	13½-14
Light gray knit	10½-11
New light fancies	14-15
New fancies	11-12

Merinos.

Light, fine	17-19
Light, coarse	7¼-7½
Fine, dark	15-16
Coarse, dark	6½-6¾
Blue	11-12
Blue—seamed	
Black—seamed	15-16
New black	18-20
Small	4¼-4¾
Bunting	7-10

WILLIAM B. CHARLES,
Cotton and Wool Wastes
Amsterdam, N. Y., U. S. A.

COTTON YARNS.

Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."

Boston Office: 200 Summer Street.

SHODDY W. H. H. SLACK & BRO. SPRINGFIELD, VT.
Established 1871 FLOCKS

M. B. SCHWAB, Pres. H. RAWITSER, Treas.
ED. GLUECK, Sec. and Gen. Mgr.
RIVERDALE WOOLEN CO., MANUFACTURERS OF
.. Shoddies ..
of every description. Capacity 7,000,000 pounds per annum.
Custom Carbonizing and Garnetting a Specialty.
New York Office:
140 DUANE STREET. RIVERDALE, NORTHBRIDGE, MASS.

Soft Clear Water.
We-Fu-Go and Scaife Water Softening Plants, and Scaife Water Filters can be seen in actual operation in Textile Plants in any part of the U. S. Apparatus designed to suit each special case, and we guarantee results. Write for Illustrated Catalogue.
WM. B. SCAIFE & SONS CO., Pittsburgh, Pa.

FLOCKS.

Shear, fine white, all wool	10-12
Fine indigo blue, all wool	7-8
Fine black and blue, all wool	6-7
Fine dark, all wool	2½-4
Gig, fine, all wool	2-3
No. 1 black, all wool cut	6-10

COTTON WASTE.

No. 1 Spinners	9½-9¾
No. 1 Machine Cop	8-8½
No. 2 Machine Cop	7½-8
No. 1 Cop	7½-8
No. 1 Card	8-8½
No. 2 Card	7-7½
No. 1 Oily Card	4½-5
No. 2 Oily Card	3½-4
Peeler Combing	8½-9
Egyptian Combing	8½-9
No. 1 Linters	5-5¾
No. 2 Linters	4¾-5
Woven White Clips	4½-5
Woven Colored Clips	1½-2¼

Dyestuffs and Chemicals.

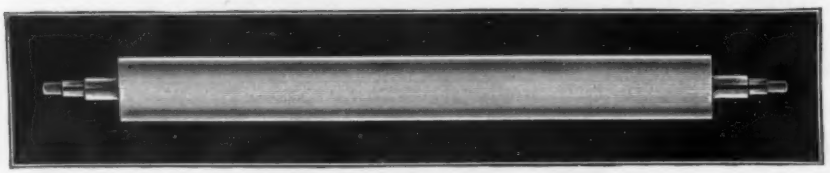
Acids.

Acetic, 100 lbs.	2.00-2.65
Citric, domestic	45-45½
Oxalic	8½-9
Sulphuric, 60 deg., 100 lbs.	1.00-1.20
Muriatic, 18 deg.	1.15-1.75
Tartaric crystals	27¾-28

Miscellaneous Chemicals.

Acetate of lime, gray, 100 lbs.	2.35-2.40
Alum, lump	1.75-1.80
ground	1.85-1.90
powdered	2.75-2.80
Aqua ammonia, 16 deg.	3¾-4
Ammoniac, sal., gray	6-6½
Borax, bbls.	7½-8½
Brimstone, crude, foreign ton	22.50
Copperas	52½-65
Cream tartar, crystals	22¾-23
Fuller's earth, lump, 100 lbs.	
powdered	80-85
Glauber's salt	55-60
Potash, chlorate, crystals	8½-9¼
powdered	8¾-9½
carbonate	4-4½
Soda ash, carbonate, 48 per cent.	1.20-1.30
high test	1.00-1.25

VULCANIZED RUBBER ROLLS FOR ALL MECHANICAL PURPOSES



Also Power Wringers of all Sizes and Descriptions

THE AMERICAN WRINGER COMPANY, 99 Chambers St., N. Y. City

FIRE, LIGHTNING, WINDSTORM.

The HOME INSURANCE COMPANY NEW YORK

Organized 1853. MAIN OFFICES, 56 CEDAR ST.

Cash Capital, $3,000,000.

ASSETS January 1st, 1906	$21,239,052
LIABILITIES (Including Capital)	12,518,551
NET SURPLUS OVER ALL LIABILITIES	8,720,501
Surplus as regards Policy-holders	11,720,501
Losses Paid Since Organization Over	99,000,000

HOME losses at San Francisco cannot exceed $2,000,000. Note amount of net surplus.

HOME Policy-holders everywhere have protection, which is sure, notwithstanding conflagrations anywhere.

IS prepared to entertain liberal lines on Sprinkler-Equipped and Modern Improved risks generally, having a special department for the consideration of such business.

ELBRIDGE G. SNOW, President.

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FREDERIC C. BUSWELL, Vice-Pres. CHARLES L. TYNER, Secretary.
CLARENCE A. LUDLUM, Ass't Sec'y. HENRY J. FERRIS, Ass't Secretary.

Soda, bicarbonate, English	
American	1.30-1.70
Soda, caustic, domestic, 60 per cent.	1.85-1.90
Sal. English	85-90
Sal. American	80-85
Sulphate, alumina	1-1¼
Vitriol, blue	7-7¼

Dyestuffs.

Acetate of soda	4¼-4½
Acid, picric, best crystals	21-26
tannic, commercial	32-35
Albumen, egg	55-75
blood	20-25
Alizarine, red	15½-16½
Aniline, oil	11½-12
salt crystals	10-10¼
Antimony salt, 65 per cent.	24½-27
Bichromate of potash, American	8⅛-8⅜
Bichromate of soda	6⅛-6⅜
Bisulphite of soda	80-1⅜
Cutch, mat	5-6
boxes	5-7
Dextrine, imported potato	5¾-7
corn	2.75-2.90
Divi-divi, ton	40.00-50.00
Flavine	23-40
Fustic, stick, ton	17.00-20.00
young root	45.00
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Hypo. of soda, Am. bbls. cwt.	1.45-1.50
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high grade	77½-90
Kurpahs	50-60
Gautemala	35-70
Manila	45-50
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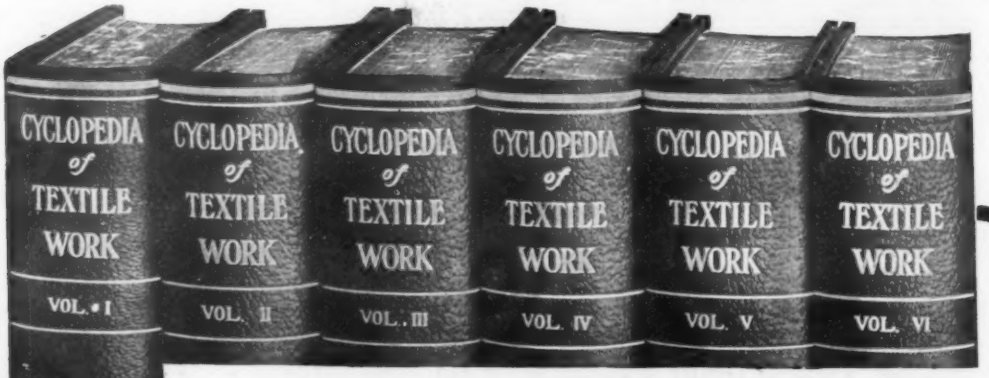
J. (Synthetic)	18-20
Indigotine	95-1.80
Logwood, stick, ton	18.00-22.00
roots	16.00-19.00
Madder, Dutch	12-14
Muriate of tin, 36 degrees	9-9¼
52 degrees	15-15¼
Nitrate of iron, commercial	1⅜-1½
Nutgalls, blue Aleppo	23-25
Persian berries	
Phosphate of soda	1.90-2¼
Prussiate of Potash, yellow	16¾-17
Quercitron, ton	20.00-22.00
Starch, corn, pearl, bbls.	2.35
corn, pearl, bags	2.20-2.40
potato	3¾-4
rice	6½-7
wheat	4¾-5¼
Stannate of soda	10-20
Sumac, Sicily, No. 1, ton	78.00-80.00
Sicily, No. 2, ton	76.00-78.00
Tapioca flour	2½-4
Tin crystals	25-26
Turmeric, Madras	6½-7
Zinc dust	5⅞-6



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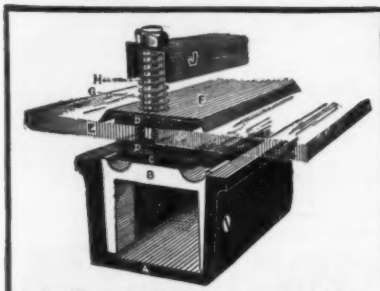

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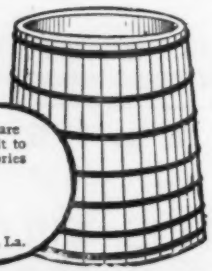

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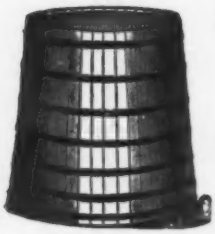

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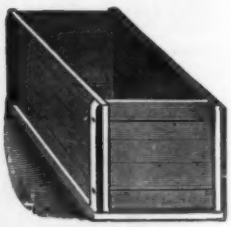

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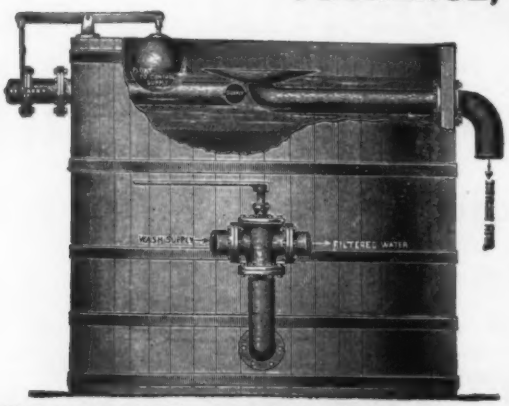

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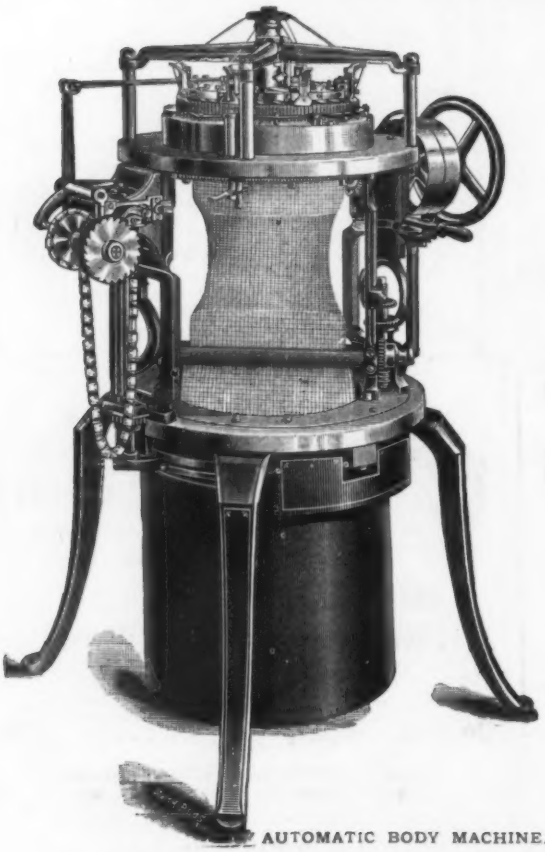

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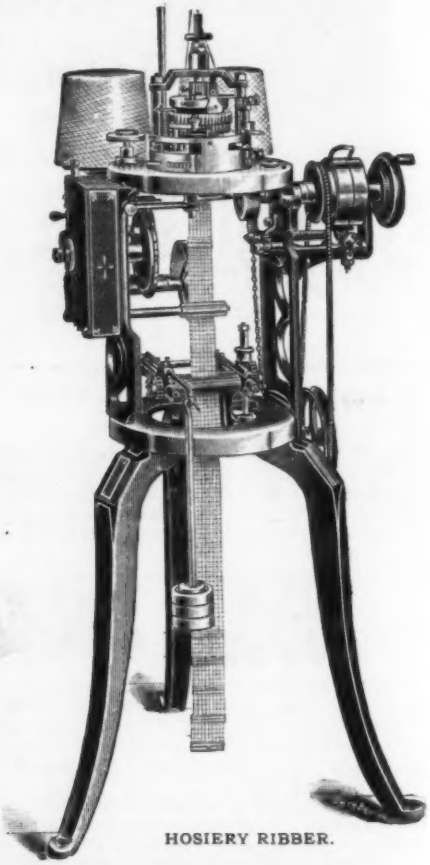

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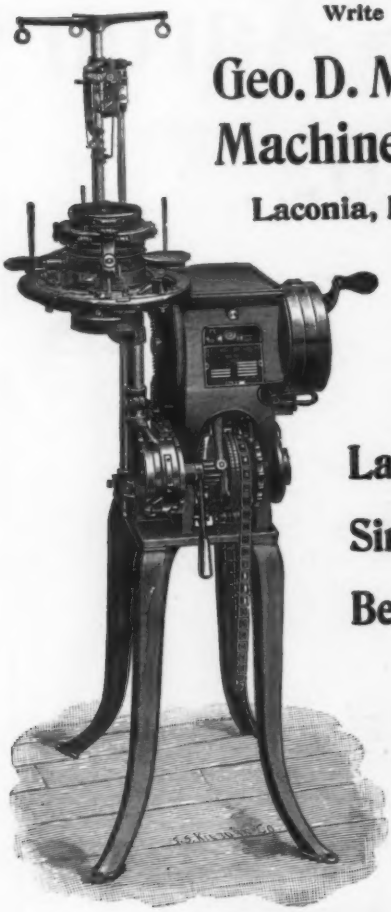

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New Full Automatic Knitter.

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KNICKERBOCKER BLDG., COR. SIXTH AND ARCH STS.
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Circular Rib Knitting MACHINERY

For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. : ; :

Correct Construction. Excellence and Durability.

LATEST IMPROVEMENTS
QUALITY OF FABRICS AND PRODUCTION
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Full Fashioned Hosiery Machines

For the manufacture of hosiery in cotton, lisle or silk in all guages, from 14 to 32 needles (spring beard) to the inch, from 12 to 24 sections, built by

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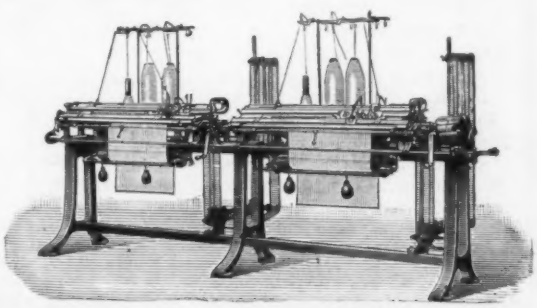
in cotton-system with split, striping, single and double lace attachments.

Also Latch Needle Machines, hand or power motion, built by

Seyfert & Donner

for the manufacture of sweaters, cardigan jackets, ladies' blouses, vests, gloves, etc. The picture represents a full automatic power machine with independent heads.

Catalog on application.



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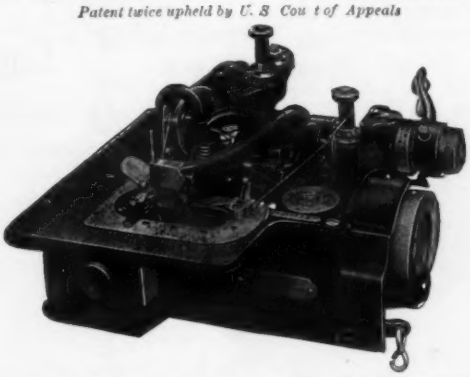
"OVERLOCK" MACHINE

(Trade Mark) (Pat. April 5, 1892)

Patent twice upheld by U. S. Court of Appeals



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WILLCOX & GIBBS SEWING MACH. CO. NEW YORK

Business Established in 1859.

For TRIMMING, SEAMING (or Hemming or Overedging) and COVERING Raw Edges of Knit Underwear and Hosiery in **ONE OPERATION** at **3000 Perfect Stitches per Minute.**

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ALL KINDS OF NEW AND SECOND HAND **KNITTING MACHINERY**

A RARE OPPORTUNITY TO BUY.

2 Bruce hand folder and cutters.
1 Weston & Dennis Press, 32x40 in., 15 Hollow Plates.
Lot hosiery stamps, boards, etc.
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50 Brinton & Co. ¾ aut. knitters, sizes.
30 Union Special machines, various styles.
1 Rotary fire pump.
1 Buffalo-Blower.
100 feet woven rubber hose, 3 inches dia.
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5 Toque machines.
30 Mayo machines. Various sizes.
100 Brooks welters.
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1 Back gear screw cutting lathe, 5 ft. x 14 in. swing.
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2 Snyder 48 spindle Cop Winders almost new.

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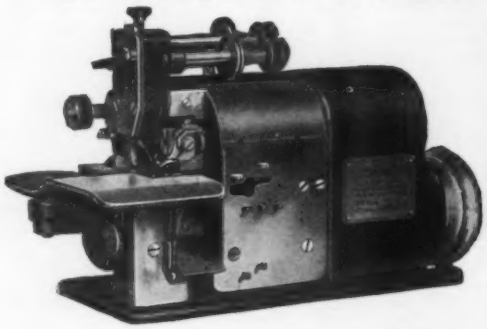
High Speed Overseaming, Overedging and Scallop Stitch Machines are

FAST
DURABLE
Light Running



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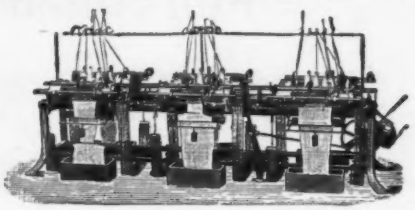
FOR ANY ARTICLE THAT IS KNIT



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For HAND power or **Fully Automatic Power Machines.** Most productive and best machines for Sweaters, Jackets, Blouses, Wool Hosiery, Gloves, Mittens, Sporting Goods in Plain, Fancy and Jacquard Work, Shaker Articles, etc. Large stock on hand. Power Machines to be seen in operation.

COTTON PATENT HOSIERY MACHINES
For automatic production of **Full Fashioned Hosiery, Fine Half Hose, Ladies' Lace Hose, Fine Underwear;** high speed, large production. All guages and any number of sections, from 2 to 24.

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C. TERROT SÖHNE, Cannstatt, Würt, famous builders of the best Circular Frame for **Finest Underwear, Fleece Linings, Gloves, Special à-jour** (open work) **Fabrics, etc.**

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For Fancy Goods in largest variety, **Shawls, Capes, Caps, Borders, Fringes, Lace Work,** etc., in silk, wool, cotton.

SPOOLERS, Paraffiners Finishing Machines, for the knitting business.

Exclusive Agency for the Famous

Julius Koehler DIAMANT OVERSEAMERS, indispensable for all full fashioned articles, Hosiery, Gloves, Jersey Sweaters, Sporting Goods, etc.

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SPECIAL MANUFACTURERS OF

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for hand and power driving, of best quality and perfect construction.

Specialty: Jacquard Machines

for hand and power driving for manufacturing of sweaters and every possible fancy article of that nature.

PRICE LISTS AND SAMPLE ON APPLICATION

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Full Automatic.

"The KNITTER that KNITS"

THE LARGEST PRODUCER OF PERFECT WORK.
SIMPLE, POSITIVE AND EASY TO OPERATE.

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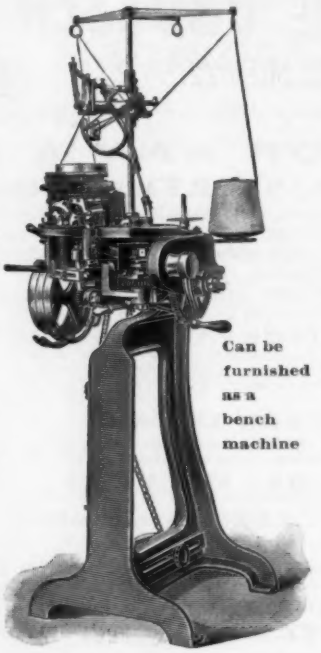
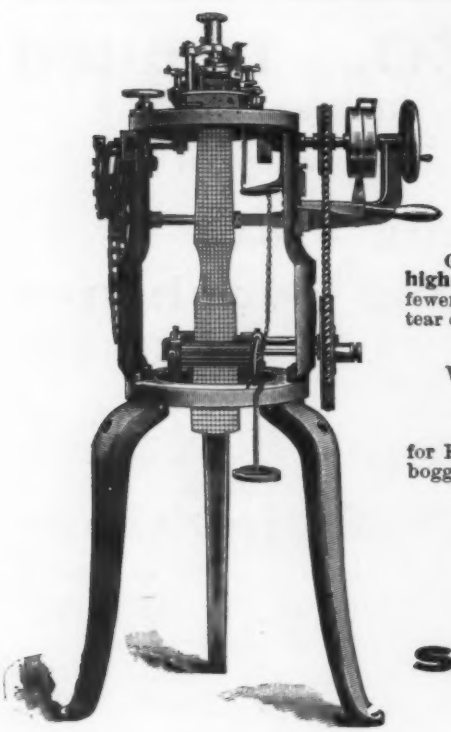


Can be furnished as a bench machine



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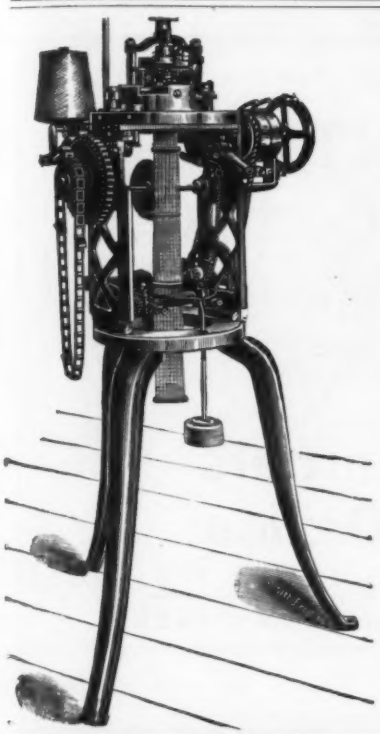

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Complete Estimates Furnished. Send for Particulars.

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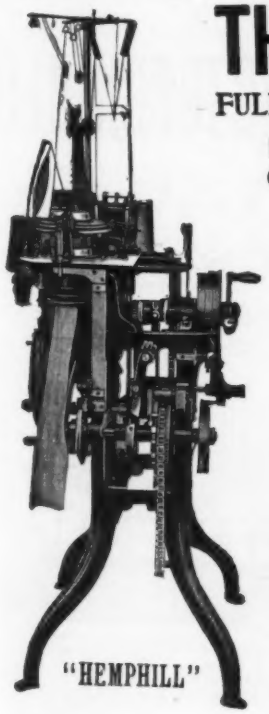

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FULLY AUTOMATIC HOSIERY KNITTERS

FOR MAKING ALL KINDS AND GAUGES OF SEAMLESS HOSIERY

One with **GEARS**, the other with **CHAIN** for pattern mechanism, to meet the various tastes of different manufacturers.

Both used and approved by leading hosiery manufacturers.

Both contain all the well-known essentials demanded of first-class knitting machines.

With these two machines we can supply all manufacturers' possible wants in the best possible manner.

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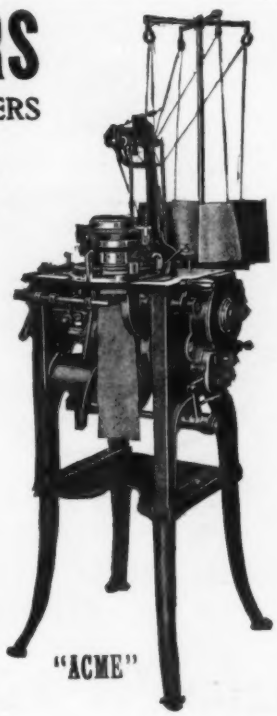

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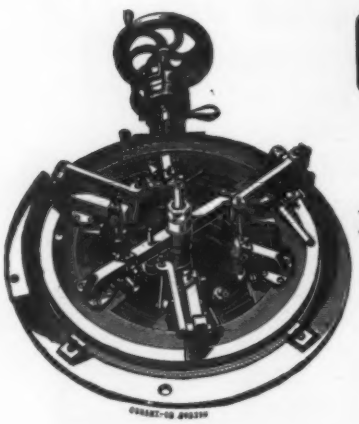
With or without **Transferring Device**

ALL SIZES AND GAUGES, 2 1-4 INCH TO 4 INCH



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Either plain or full automatic, with stop motions complete. 4 to 24 feeds for

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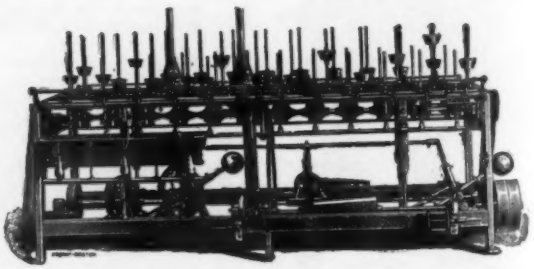
Automatic Racking and Striping Machines for Sweaters, Cardigans, Collarettes, Cuffs and Anklets.



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By Hosiery Manufacturers,
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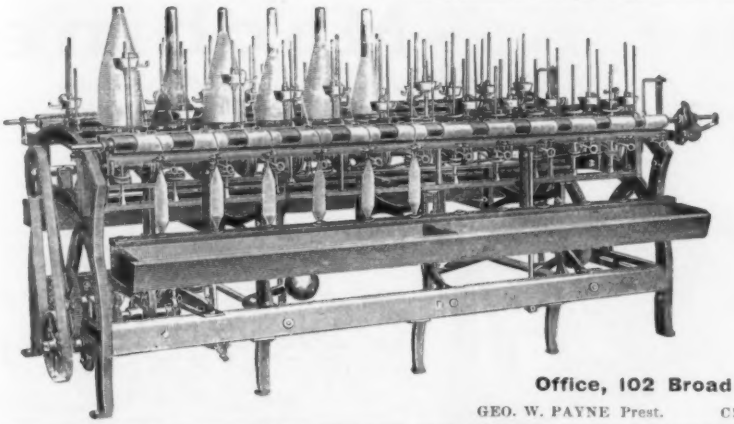

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Upright Spoolers,

To Spool from Cop, Skein or Bobbin.

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(Making AUTOMATIC NARROWINGS and WIDENINGS)

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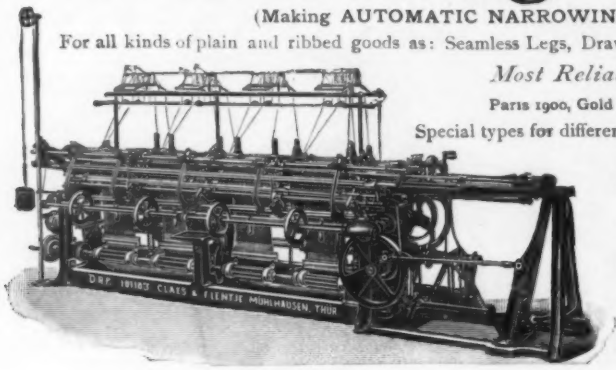

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Paris 1900, Gold Medal! Paris 1900, Gold Medal!

Special types for different articles. Number of heads to order.

Automatic Sweater Machine

With Independent Heads, Latest Improvements. Recognized as "The Best"

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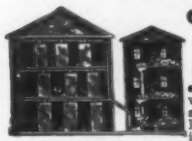

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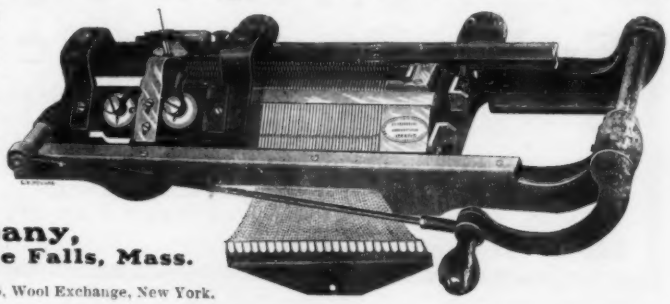

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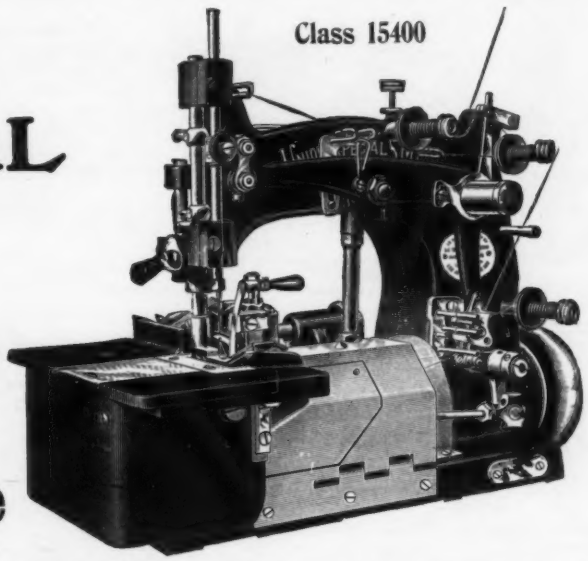

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FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.
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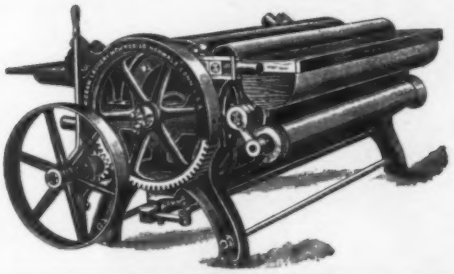

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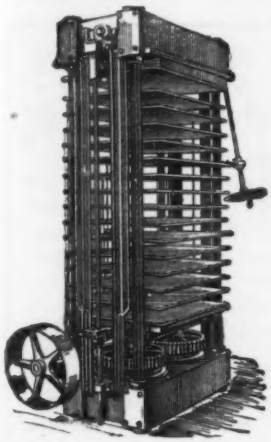

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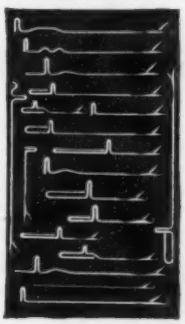

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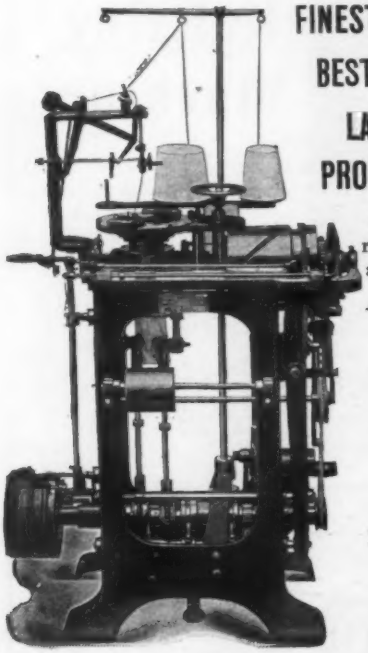
Write for particulars.

Dye Sticks, Dye Poles, Wood Rolls, Fans and Trucks.

FRANK BAILEY, Manufacturer, Works at Braddock. P. O. Ad., Cedar Brook, Camden Co., N. J.

"NATIONAL"

Stands for



FINEST GAUGES
BEST FABRIC
LARGEST
PRODUCT ON

Greatest Variety of Laces and Novelties.

All automatic.

Lowest Cost for Operating

Also
Rib Knitting Machinery, Overedge, Crochet and Shell Stitch.

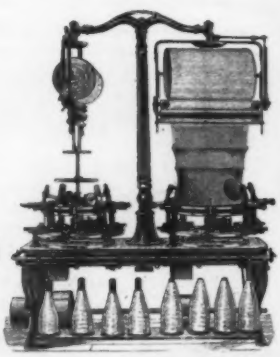
NATIONAL AUTOMATIC KNITTER CO.

728 Cherry Street, PHILADELPHIA, PA.

The greatest producing and most perfect

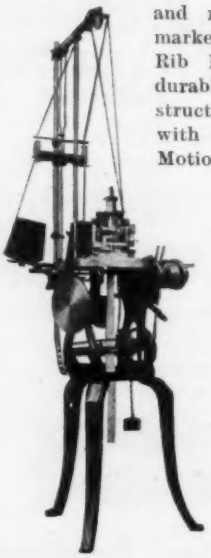
Spring Needle Knitting Machine in the World

Manufactured by
Robert W. Gormly & Co.
Troy, N. Y.



We are the oldest manufacturers of this kind of machines in the country.

Ruth Rib Knitting Machinery is the latest



and most improved in the market to-day for any style of Rib Knit goods. They are durably built, simple in construction and easily operated with our Automatic Stop Motion.

We have attained the greatest production with the least menders and needle breakage over all other machines

Write for our liberal trial proposition

RUTH Machine Co.

YORK, PA.
G. W. RUTH, Manager

The Universal Necessity

for new designs in Fancy Covers for Paper Boxes and the urgent demands for them have led to the adoption of

Cameo Papers

a line selected from among the best selling papers in foreign markets. Abroad, they have met with exceptional success wherever introduced and our success in handling them is assured at the start by reason of

The Moderate Cost
Attractive Appearance
Good Working Qualities
Durability of Texture
and Value Received

There are two designs consisting of assorted, standard tints, one design including gold and silver.

Have your box maker show you our sample book No. 78 or send to us for full sheets to make up a few sample boxes.

CHARLES BECK PAPER CO., LTD.

Philadelphia, Pa.

Buy

Hosiery Machines

right!

Investigate what *each make of machine will do*, in quality and quantity of product, the cost of repairs, length of life, etc. Such an investigation will show *you* why so many manufacturers

Buy the Standard F

It is good on the start—and *stays good*

Write for catalog and prices.

STANDARD MACHINE CO.

HOSIERY MACHINES. 508 Ludlow Street, Philadelphia, Pa.

Do you wish to make knit goods as perfect as the French or German, and as rapidly as the American?

Do you want to plait?

Do you want to knit worsted or silk?

?

WRITE TO

TOMPKINS BROS. CO.,

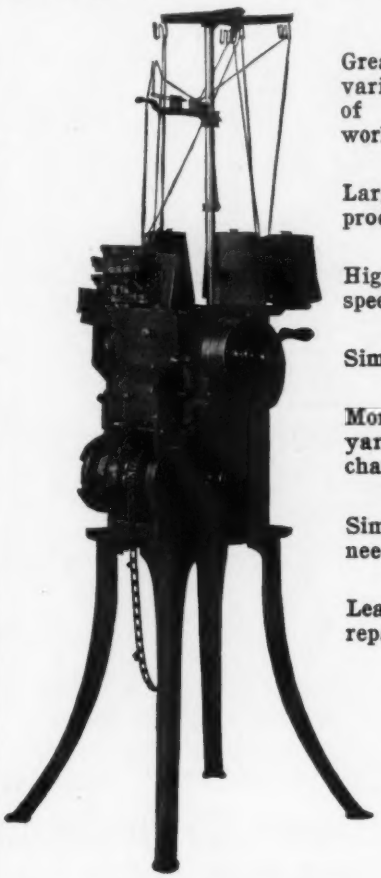
TROY, N. Y., U. S. A.

Hemphill's Latest

"The Banner"

FULL AUTOMATIC MACHINE.

Specially adapted to Platted Goods.



Greater variety of work

Largest production

Highest speed

Simplest

More yarn changes

Simpler needles

Least repairs

The wonder of the 20th Century

Manufactured by the

HEMPHILL MFG. COMPANY

321 PINE ST., PAWTUCKET, R. I.

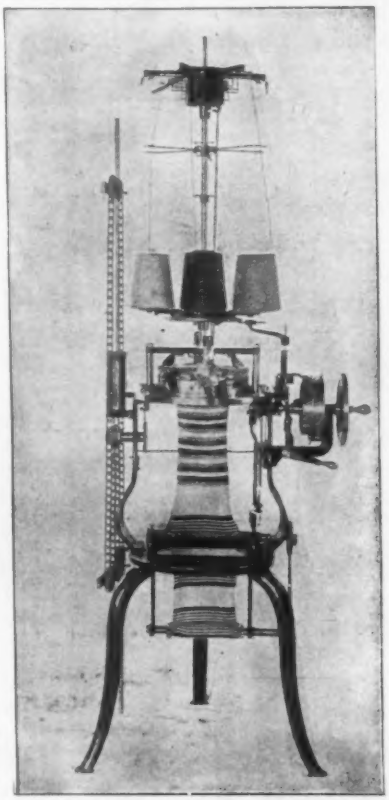
Established 1870.—Incorporated 1890.

CRANE M'F'G. CO.,

LAKEPORT, N. H.

Manufacturers of

Spring and Latch Needle Machines for both rib and plain work, producing a great variety of fabrics. Patent removable hardened Wing Burr Wheels.



Improved Automatic 3-Colored Plain Striper.

KNIT FABRICS CUT TO LENGTH.

Our Knit Fabric Cutter

will cut from the roll, knit fabric into any length from 10″ to 40″ at the rate of 100 pieces a minute. The lengths are accurate, the waste is a minimum, the labor unskilled.

We also make a Slitter

for cutting these goods into narrow strips and rewinding same into rolls.

SAMUEL M. LANGSTON,

Manufacturer of Paper Box Machinery. **Ninth above Market Sts., Camden, N. J.**

The New Boss Seamless Knitter

Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

Send for prices and particulars.

THE BOSS KNITTING MACHINE WORKS,

Cor. Elm and Reed Sts., Reading, Pa.

LEWIS JONES,

60½ and Media Streets, . . . PHILADELPHIA.

GAS ENGINES for city or country } EFFICIENT
BRUSHING MACHINERY } DURABLE
KNITTING MACHINERY } LOW IN PRICE

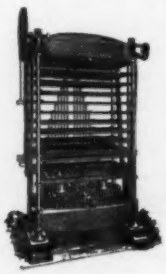
Jarrard Needle Works,

New Brunswick, N. J.

Manufacturers of

Spring Knitting Needles and Sinkers, Slides, Web Holders, Jacks, Burr Blades, etc.

The CRAWFORD



HOLLOW STEAM

PLATE PRESS

For Knit or Woolen Goods.

The most reliable machine of the kind on the market.

PRESS PAPERS and FENDERS.

SPENCE & RIDEOUT,

Successors to

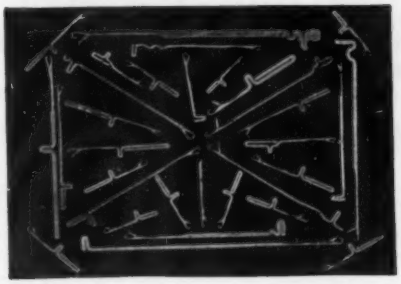
J. J CRAWFORD & SON,

NASHUA, N. H.

Established 1868.

TRY OUR "SUPERIOR" OR SUNKEN RIVET-HEAD NEEDLES

They will save you money.



Dodge Needle Co., Manchester, N. H.

WM. COREY CO.,

Manufacturers of Knitting Machine

Latch Needles

MANCHESTER, N. H.

EXCELSIOR NEEDLES.

The best Hosiery Needles in the market.

Manufactured by

WARDWELL NEEDLE CO., Lakeport, N. H.

WM. BREEDON'S SON,

MANUFACTURERS OF

Spring Knitting Needles

AND BURR BLADES OF ALL KINDS.

AMSTERDAM, - N. Y.

ORION TREAT

MANUFACTURER OF

Screw Riveted Balmoral and Double Rib NEEDLES

(Patented May 6, 1890.)

All Work Guaranteed. MANCHESTER GREEN, CONN.

Standard Latch Needles

MANUFACTURED BY

EXCELSIOR NEEDLE CO.,

TORRINGTON, CONN.

The Largest Manufacturers of Machine Needles in the World.

STANDARD

TRADE MARK.

Longer Wear. Better Work.

Less Mending. Fewer Seconds.

Have you tried our

Patent Milled Rivet?

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C. Shawl, 414 Polk St. San Francisco, Cal
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L. T. IVES CO.

Manufacturers of all kinds of

SPRING KNITTING NEEDLES

NEW BRUNSWICK, N. J.

PAGE NEEDLE CO.,

MANUFACTURERS OF

LATCH NEEDLES

of all kinds. Warranted in every respect.

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Manufacturers' Supplies Co.

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Needles and Supplies for Knitting Mills.

Agents for EXCELSIOR NEEDLE CO., and NATIONAL NEEDLE CO.

The Continental Latch Needle Company.

Manufacturers of the BEST GERMAN NEEDLE on the Market.

RIVETS GUARANTEED. Samples on application. SPRING NEEDLES A SPECIALTY.

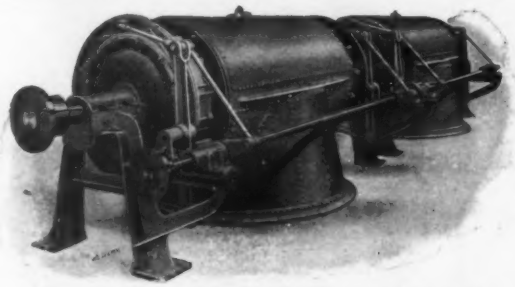
120-122 LIBERTY STREET, - - - - - - - - - NEW YORK.

PAIR McCORMICK TURBINES

4,000 H. P., 72 ft. head, arranged to drive generator and a single turbine to drive exciter. Five settings built for the Hudson River Water Power Company's Spier Falls plant and 14 pairs 51 inch for their plant at Mechanicsville, N, Y.

Write for Catalogue if contemplating purchase of turbines.

S. MORGAN SMITH CO.
YORK, PA.
Boston Office, 176 Federal Street.



2 PAIRS OF IMPROVED NEW AMERICANS ON ONE SHAFT.

The High Speed, Power, Efficiency and Durability of the

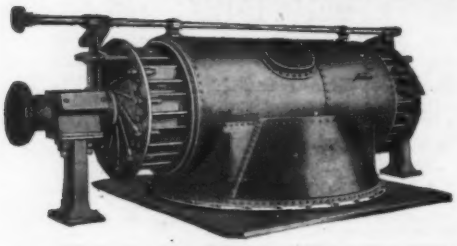
IMPROVED NEW AMERICAN TURBINE

ADAPT IT TO ALL CONDITIONS.

Write for Catalog 18

The Dayton Globe Iron Works Co.
Dayton, Ohio.

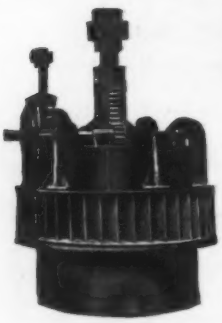
SAMSON TURBINE



AN EVEN and REGULAR SPEED under all CHANGES of LOAD is always desirable. This condition combined with a QUICK SPEED and HIGH EFFICIENCY makes a combination hard to beat. The SAMSON maintains all these conditions under the most severe tests.

Write Department A-5 for Catalogue.

The James Leffel & Co.,
SPRINGFIELD, OHIO, U. S. A.



Risdon-Alcott Turbine Co.

MOUNT HOLLY, NEW JERSEY, U. S. A.

RISDON CELEBRATED TURBINE
ALCOTT HIGH DUTY TURBINE
LEVIATHAN HINGED GATE TURBINE

On Horizontal or Vertical Shafts.

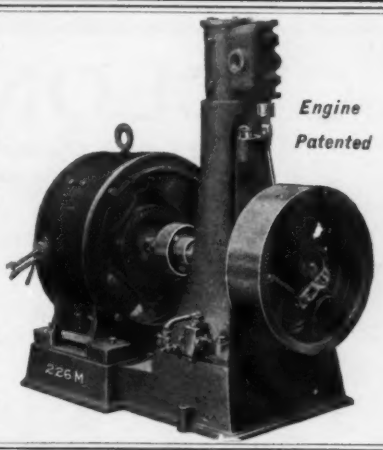
These Turbines are recognized as the most effective water wheels made. Your inquiries should come direct to us for this class of machinery.

A Significant Fact.

70% of our Self-Oiling Engines sold during the past three months have been purchased by concerns who have used Engines of the same type before.

Shall we send you descriptive matter?

American Blower Company,
DETROIT, MICH.
New York Chicago London



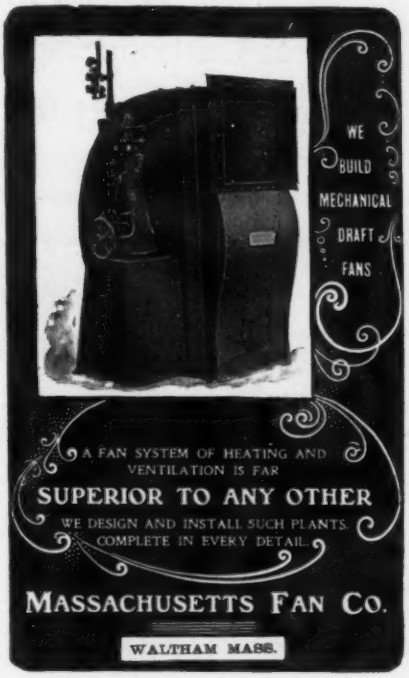
Engine Patented

There is but one "Cyclone" Dust Collector — The Knickerbocker Cyclone.

VELOCITY is the unit of strength required to hold material of given gravity suspended in the air current.

VOLUME is the multiple of velocity units necessary to carry a given quantity of material.

The Knickerbocker Co.
Jackson, Michigan.


WE BUILD MECHANICAL DRAFT FANS
A FAN SYSTEM OF HEATING AND VENTILATION IS FAR
SUPERIOR TO ANY OTHER
WE DESIGN AND INSTALL SUCH PLANTS COMPLETE IN EVERY DETAIL.
MASSACHUSETTS FAN CO.
WALTHAM MASS.

Brass, Aluminum and other
Trade, Time and Tool Checks, Numbering Machines, Time Stamps, Stencils, Inks, Brushes, Burning Brands, Steel Stamps, etc.
Send for Catalog No. 26.
N. STAFFORD CO.
67 Fulton St., New York.

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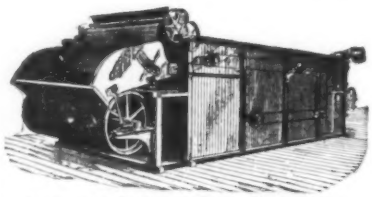
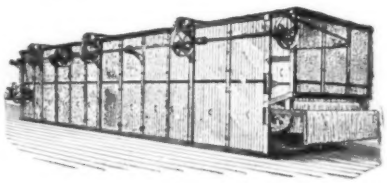
"CYCLONE" DRYERS

For Cotton Stock, Wool Stock, Rags, Yarn, Cloth
Underwear, Stockings, etc.



Automatic Cotton or Wool Stock Dryer.



Automatic Yarn Dryer.

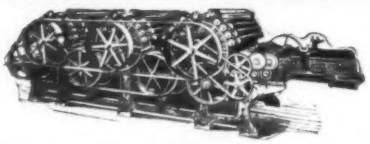
Steel Bladed Ventilating Fans.

Iron Bowl Yarn Scouring Machines.

Complete Carbonizing Outfits for Wool, Rags or Cloth.

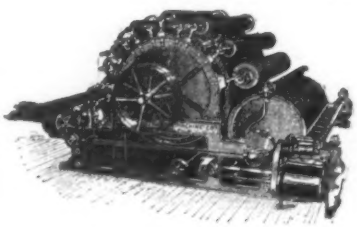
THE PHILADELPHIA TEXTILE MACHINERY CO.,

Hancock and Somerset Streets, PHILADELPHIA, PA., U. S. A.

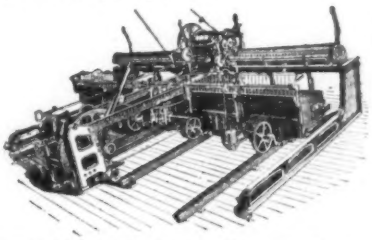


CARNETT MACHINES AND PICKERS

For reducing to Fibre Cotton and Wool Waste, Cloth Clippings, Etc.



WOOLEN MILL MACHINERY



Including Rag, Wool and Burr Pickers, Wool, Worsted and Shoddy Cards, Mules, Yarn Twisters, Warpers, Dressers, Spoolers, Etc.

Complete Equipment for Manufacturing Cotton Batting for All Purposes.

Special Carding and Spinning Machinery for manufacturing Yarn from such low grade stock as Mill Sweepings, Linters, Etc.

We reclothe or furnish new Metallic Toothed Cylinders and Rolls and relagg or furnish new Cylinders for any make of Rag Picker.

SMITH & FURBUSH MACHINE CO., Hancock and Somerset Streets, **PHILADELPHIA, PA., U. S. A.**

Butterick Trio

The rate for advertising in The Delineator, The Designer, and the New Idea Woman's Magazine is $7.12½ per agate line—about

$100 PER INCH

—highest rate charged by any magazine of this class, but positively the

Best VALUE in the whole field of Advertising

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W. H. BLACK, Advertising Manager,

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1,600,000 homes

are reached every month by the Butterick Trio—the cream of American consumers in all parts of the country. They are women who buy for families, and who buy at retail stores. In all a total of about

ten millions of prosperous readers

Foster Machine Company

WESTFIELD, MASS.

BUILDERS OF

CONE AND TUBE WINDERS

Both Close and Open wind.

Our Machines are in use in Cotton, Wool, Worsted, Silk and Linen Mills.

The FOSTER WIND CONE makes a Perfect Knitting Package.

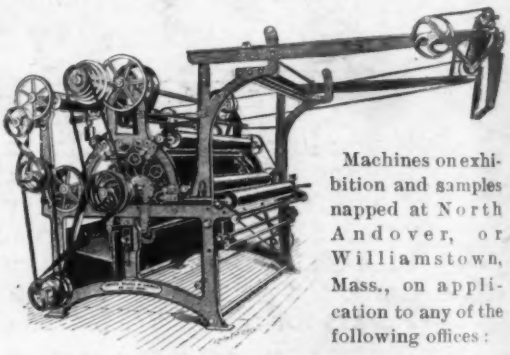
"Sirocco" Propeller Fans

At equal speeds have 50% greater volumetric capacity than other makes of Propeller Fans. For equal duties show 15% saving in power.

Sirocco Engineering Co.,
22 Thames Street, New York.

THE AMERICAN NAPPING MACHINE CO.

Own the principal patents on Napping Machines, representing the latest French, English and American Patents.



Machines on exhibition and samples napped at North Andover, or Williamstown, Mass., on application to any of the following offices:

Davis & Furber Machine Co.
Builders and Selling Agents, North Andover, Mass.
Geo. S. Harwood & Son, 53 State St., Boston
H. H. HEAP, Treasurer and General Manager
WILLIAMSTOWN, MASS.

Walworth Manufacturing Co.,

HIGH PRESSURE

VALVES AND FITTINGS

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